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## **MEMORANDUM**

**To:** *Project File – 3282-116*

**From:** *Angela K. Frandsen, CDM/Helena, Auditor*

**Contract:** *U.S. Environmental Protection Agency – Region VIII Response  
Action Contract/Contract No. 68-W5-0022*

**Date:** *July 17, 2002*

**Subject:** *Quality Assurance Field Systems Audit Report – Libby Asbestos Site,  
Operable Unit 4, Contaminant Screening Study, Libby, Montana*

## **INTRODUCTION**

A quality assurance (QA) field systems audit of the CDM Federal Programs Corporation (CDM) Libby Asbestos Site, Operable Unit 4, Contaminant Screening Study (CSS) field activities in Libby, Montana was conducted on June 18-19, 2002. The purpose of the CSS is to collect comprehensive information on the presence of vermiculite insulation, vermiculite in soils, and history of asbestos-related illness for as many residences as possible in the Libby area. This information will be the basis of EPA Region VIII's Remedial Investigation (RI) in Libby, Montana. The field audit specifically addressed field reconnaissance and soil sampling activities at residences throughout Libby. The reconnaissance activities consisted of an interview with the resident, inspection for vermiculite insulation in the attic and walls, inspection of the yard for vermiculite in the soils, and a property sketch. Soon after the reconnaissance team visited a residence, a soil sampling team visited the property, where soil samples were taken from major land use areas (lawns, driveways, gardens, etc.). In addition to the CSS reconnaissance and soil sampling activities conducted by CDM, the auditor also checked on adherence to the applicable quality assurance/quality control (QA/QC) requirements as specified in the following documents:

- CDM RAC Region VIII Quality Assurance Management Plan (QMP), Revision 1, May 31, 2002.
- Original Work Plan Libby Asbestos Site, Operable Unit 4 Libby Asbestos Remedial Investigation Sampling and Analysis Plan and Supporting Activities, Libby, Montana, Volume I – Technical (WP), March 11, 2002.



- Final Sampling and Analysis Plan, Remedial Investigation, Contaminant Screening Study, Libby Asbestos Site, Operable Unit 4 (Final SAP), April 30, 2002 including site-specific technical standard operating procedures (TSOPs).

The audit was conducted by Angela K. Frandsen (CDM Federal/Helena), an approved field auditor. In preparation, the documents cited above were reviewed so that pertinent RI activities were noted. A copy of the audit checklist is attached to this memorandum. CDM personnel contacted prior, during, and subsequent to the audit included:

Dee Warren/Libby – Field Team Leader (FTL)  
David Schroeder/Libby – Field Site Manager  
Jeff Montera/Denver – Project Manager  
George DeLullo/Denver – RAC Region VIII QA Coordinator  
Terry Keller/Libby – Sample Coordinator  
Jennifer Krueger/Libby – Sample Coordinator  
Julie Brossman/Libby – Administrative Support (Libby Field Office)  
Noel Anderson/Libby – Field Health and Safety Officer  
Michael Grasso/Libby – Field Geographic Information Systems Specialist  
Krista Lippoldt/Denver – RAC Region VIII QA Coordinator  
Field Team Members (Reconnaissance and Soil Sampling):  
Brian Pyles, Paul Opem, Richard Eustice, Michael Coffee, Carrie Fingeret, Tom Vanderweel, Karin Mainzhausen, Karen Berry, Bob Purtee, and Albert Munoz

## **AUDIT RESULTS**

The CSS reconnaissance and soil sampling activities were the primary focus of this field audit. These activities are discussed in the sections below. Proficiencies as well as deficiencies are noted below.

### **Relevant Documents Available On-Site**

The auditor noted that a copy of the Final SAP (which includes the necessary TSOPs, site-specific SOPs, and HASP) was available at the Libby field office.

### **Soil Sample Collection Procedures [Final SAP, Sections 4.3.3.3 and 5.4 and SOP CDM-LIBBY-05]**

The auditor observed soil sampling activities at two residential locations with two different field teams. Site-specific SOP (CDM-LIBBY-05) soil sampling procedures were followed by the field teams. An exception was that the area to be sampled was not wetted (to minimize dust) during the audit because it was raining (note that this procedure was added via Record of Deviation/Request for Modification form (Deviation/Modification form) #000037 after it was confirmed that the laboratory could receive wet samples). Composite samples (containing the appropriate number of sampling aliquots) were taken at appropriate



locations, land-use areas (i.e., gardens, lawns, driveways, etc.), and specified depths. The auditor noted that soil sampling conducted at each new residence was efficient because of the property sketch and information that the reconnaissance teams had recorded on the Information Field Forms (IFFs). The soil samplers noted the samples on the property sketch in the IFF. All soil samples were double bagged and were clearly labeled with an index ID number (CS-#####). All necessary sample information was recorded on a Field Sample Data Sheet (FSDS).

GPS coordinates were taken of all soil sampling locations. Each GPS point is assigned a location ID number (SP-#####). The electronic files recorded in the GPS units are downloaded and organized at the end of every day by the field GIS specialist. If any locations in the yards were of special interest, a photograph was taken. The auditor also noted that the reconnaissance teams took a photograph of the front of every residence.

#### **Decontamination of Soil Sampling Equipment [Final SAP, Section 5.6, TSOP 4-5, and SOP CDM-LIBBY-05]**

The auditor noted that the soil sampling equipment decontamination procedures were followed with one minor exception. Alconox detergent was not used to clean soil sampling equipment. Equipment was simply rinsed with deionized water. Because the detection limits for Libby Amphibole (LA) asbestos are in the 0.1 percent (%) range, it was concluded by field management that simply thoroughly rinsing with deionized water should be an effective decontamination procedure. This issue was discussed with the FTL who decided to document the deviation from the SOP in a Deviation/Modification form. The auditor noted that a continuation of this decontamination procedure (not using alconox detergent) would be contingent upon silica sand equipment blanks and aqueous rinsate samples being non-detect for LA. Subsequent to the audit, Deviation/Modification form #000044 was completed and has been submitted for approval (copy attached). The auditor has determined that no further corrective action was necessary.

#### **Field Change Control Requirements [Final SAP, Section 5.2.2 and Appendix D]**

Field changes were documented Deviation/Modification forms. Prior to the audit, several forms relevant to the CSS had been completed and approved. The auditor noted that the same form is used for all Libby sampling programs. Completed forms included # 000033 (change format of Index ID), #000034 (changed some of the questions on the Information Field Form), #000035 (noted that aqueous rinsate samples would not be taken the first week of the field season because a laboratory had not been procured), #000036 (added a space on the FSDS to include equipment blanks), and #000037 (wetting the soil during soil sampling to minimize dust generation).

The auditor noted that field teams are generally cognizant and aware of changes to the field procedures through the daily morning meetings.



### QA/QC Samples [Final SAP, Sections 5.4.2 and 7.1]

The auditor observed the collection of a silica sand equipment blank sample and an aqueous rinsate sample on June 18, 2002. These two QA/QC samples were being collected at the proper frequency, which was one sample per day for the equipment blank, and one rinsate per day for one week for three weeks throughout the field season. A different field team collected the blank samples each day. The auditor noted that ASTM Type II water was not being used for the rinsate, as was stated on page 5-5 of the Final SAP. This deficiency was discussed with the FTL who determined that locally available deionized water would be adequate because the rinsates are being looked at for LA fibers. Deviation/Modification form #000040 was completed to document this deviation. Additionally, the auditor observed that duplicate samples were being collected at the proper frequency (one per twenty samples). Each field team was responsible for collecting the proper number of duplicate samples since it was unknown how many samples each team would be collecting on a daily basis. However, in a discussion with the RAC Region VIII QA coordinator, it was realized that having each team independently collecting duplicate samples may result in an excess of sample duplicates being collected, unnecessarily increasing analytical costs. For example, if four teams each collected 30 samples (total of 120 samples), then each team would have taken two duplicate samples, resulting in eight duplicates. However, only six duplicates are needed to meet the required duplicate frequency. This issue was discussed with one of the Libby sample coordinators who understood the issue and noted that she will communicate with the samplers to minimize this potential problem. No further action was deemed necessary by the auditor. However, the frequency of duplicate collection will be regularly monitored as part of the ongoing on-site QA manager (QAM) duties.

The auditor noted that arrangements for the CDM Soils Laboratory in Denver (where soils are processed before they are sent to the analytical laboratory) to collect laboratory QA samples (preparation blanks and preparation duplicates) had not been initiated. At the time of the audit, there was no current protocol for these QA samples to be assigned an index ID for entry into the Libby database. The sample coordinators were going to discuss the situation with the CDM chemist in Denver on the most effective means for the CDM laboratory to assign documentation for the QA samples. Compliance with this requirement will be regularly monitored as part of the ongoing on-site QAM duties.

### Sample Custody, Packaging, and Shipping [Final SAP, Sections 5.4.5 and 5.4.6 and TSOPs 1-2 and 2-1]

On June 18, 2002, the auditor observed the soil sampling field teams relinquishing samples to one of the sample coordinators. All sample custody transfers were properly made according to TSOP 1-2. However, the auditor noted that inappropriate comments (i.e., "duplicate" or "vermiculite present") were included on chain-of-custody forms 2662, 2663, and 2664. This information should not be provided to the laboratory because the laboratory should be blind to the contents of the samples. The auditor noted that this was isolated occurrence and that this was the first set of chain-of-custody forms that this sampler had completed. This issue



was discussed with a sample coordinator who stated samplers would be reminded to eliminate this type of information on the chain-of-custody forms. Finally, the auditor noted that samples were kept secured in a locked room prior to shipping.

On June 19, 2002, the auditor observed one of the sample coordinators package soil samples on chain-of-custody forms 2647, 2662, 2663, and 2664 for shipment to the CDM Soils Lab in Denver, Colorado for processing. The chain-of custody forms were properly relinquished to the laboratory and the samples were packaged, taped, and custody sealed as stated in the Final SAP and TSOPs 1-2 and 2-1.

**Field Documentation Requirements [Final SAP, Section 5.5, and SOPs CDM-LIBBY-04 and CDM-LIBBY-05]**

The field documentation requirements for the CSS are extensive. Consistency and accuracy in completing the information on the Information Field Forms (IFFs) during resident reconnaissance and the Field Sample Data Sheets (FSDSs) are of critical importance for this project due to the amount and variety of information that is being recorded for the CSS. This information also needs to be consistent for entry into the Libby database. For example, a flowerbed needs to be specifically addressed as a flowerbed and not some variety of that description (e.g., flower garden, flowers, etc.).

Several measures have been taken by field teams to ensure consistency on the IFFs and FSDSs. For example, the field teams are limited to particular categories or descriptions that can be circled and are limited to sample groups on a master list (provided to the field teams by the sample coordinators). This action controls the categories of information that can be recorded and then ensures consistency in data entry. If a feature or some aspect of the investigation does not fit into these predetermined categories, the field teams are required to discuss this problem with the sample coordination team to determine whether or not a new category or description may be added. To ensure that all information being recorded on the IFFs and FSDSs is accurate and complete, the person who filled out the information must sign the sheet and then the other team members must conduct a QC check of the information and sign off before these forms are turned in to the sample coordinators at the end of the day. In checking through the FSDSs and IFFs, the auditor noted no major deficiencies. The field teams are commended in developing and implementing this rigorous system of checks and balances. The only issues noted by the auditor were considered minor and mainly editorial, such as being sure to line out, sign/initial, and date all corrections and lined-out areas on the forms and to be sure that streets are labeled on the property sketches in the IFFs.

All IFFs and FSDSs are organized and maintained by the sample coordinators. The sample coordinators also control access to field documentation. Additionally, index IDs, SP numbers, and BD numbers are controlled by sheets of labels that are signed out to the field teams. This action ensures that any ID numbers are not repeated.



During the audit, the auditor noted that only one BD number (building identification number) would be used for an apartment building. Previously, a new BD number was assigned to each apartment in the building. Instead, field management decided that the same BD number would be used for all residences within the apartment building, and that separate IFFs would be completed for the different residents. Deviation/Modification form #000041 was completed by the FTL to note this change in procedures. The auditor is satisfied that field documentation requirements are met by field teams and management as stated in the Final SAP and TSOPs 1-2 and 2-1.

#### Field Logbook Requirements [Final SAP, TSOP 4-1]

Field teams are required to maintain a logbook recording of their activities for the day. However, the information contained in the logbook is fairly minimal due to the extensive amount of information being gathered on the IFFs and FSDSs. Therefore, the auditor determined that it was important that only a few key pieces of information were included in the logbooks for cross-reference so that most, if not all, critical information was contained on the IFFs and FSDSs. The information recorded in logbooks for each residence was a reference to the BD number, the index IDs and SP numbers corresponding to samples taken and GPS locations, chain-of-custody numbers, as well as the address, date, and time of reconnaissance and sample collection. A brief mention of whether or not vermiculite insulation or soil amendments were found was also noted.

The auditor noted that even though the amount of information to be included in the logbooks was simple, some deficiencies were found. Not all field teams consistently completed the "up-front" information at the beginning of each day (i.e., activities being performed, name of individual making the entry, other field team members present, weather conditions, level of personal protective equipment, etc.). It was also noted that new author sign-in procedures were not consistently followed if another team member recorded information in the logbook. Occasionally, lines were left blank in the logbook. While auditing one of the soil sampling teams (logbook #100070), the auditor noted that the field team was completing sample information for all of the residences to be sampled for that day ahead of time. However, the residences were not necessarily visited in the same order as the notes were written in the logbook. As an example, this resulted in a time of 11:00 recorded on the first page, then 9:00 on the following page, making the pages chronologically out of order. Additionally, this field team had written notes below the area that had been previously lined out. The field team was reminded by the auditor that the logbook represents a legal documentation of their daily activities, and that the activities need to be recorded in chronological order. These concerns were also discussed with the FTL and field site manager at the audit debriefing meeting.

At the daily morning meeting on June 20, 2002, the auditor discussed the above concerns about the logbooks to all field teams and reminded them of the information that should be contained in the logbooks. The FTL has subsequently provided logbook entry examples with all the deficiencies resolved that have been discussed in this section.



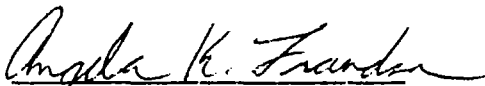
## CONCLUSION


In general, the Libby CSS field teams are commended by the auditor for the level of organization exhibited on this unique project. The field teams have expended an extensive amount of effort and forethought into an effective and consistent way of gathering and compiling highly personal and potentially variable information from the Libby residents. The field teams are also commended for their friendly and personable manners when interviewing residents. Any deficiencies and deviations discussed in the Audit Results section were either corrected during or subsequent to the audit or were documented using a Deviation/Modification form.

This approved audit report constitutes the Audit Completion Notice documenting the satisfactory completion of this audit.

Prepared by:

Approved by:

  
Angela K. Frandsen, Auditor

  
RoseMary Gustin, RAC Region VIII QA Manager

### Attachment

cc:	L. Brown	K. Lippoldt	D. Schroeder
	G. DeLullo	J. Montera	T. Wall
	R. Gustin	D. Nelson	HQ QA Files - Denver
	T. Keller	M. Schwan	Document Control - Denver

**CDM Federal Programs Corporation**  
**SAMPLING FIELD AUDIT CHECKLIST**

Project No./Title: 3282-116 / Libby Asbestos Site, OU4, Libby, MT (Contaminant Screening  
 Auditor/Date: Angela Francisco / June 18-19, 2002 Study)  
 Project Manager: Jeff Montero Firm Audited: CDM  
 Field Team Leader: Dee Warren, CDM CDM Federal QA Coordinator: Krista Lippoldt  
 Audit Location: Various Residences in Libby, MT

Documents Relevant To This Audit (List titles, dates, sections) CDM QMP; Original Work Plan  
Libby Asbestos Site, Operable Unit 4 Libby Asbestos Remedial Investigation Sampling  
and Analysis Plan and Supporting Activities, Libby, Montana, Volume I - Technical  
(3/11/02); and Final Sampling and Analysis Plan, Remedial Investigation,  
Contaminant Screening Study, Libby Asbestos Site, OU4 (Final SAP) (4/30/02).

Review these documents in detail and record applicable Field Plan sections and SOPs for each activity to be checked.

Field Activities To Be Checked/Applicable Field Plan Section or SOP: Final SAP Sections 5+7;  
CDM TSOPs 1-2 (Sample Custody), 2-1 (Sample Packaging + Shipping), 2-2 (Handling of IDW)  
4-1 (Logbooks), 4-2 (Photographic Documentation), 4-5 (Field equipment decontamination);  
Site Specific SOPs CDM-LIBBY-03 (Completion of Field Sample Data Sheets), CDM LIBBY-04  
(Completion of Information Field Forms), CDM-LIBBY-05 (Site Specific SOP for  
Soil Sample Collection)

Personnel Contacted During Audit and Affiliation: Dee Warren (field team leader), Dave  
Schroeder (site manager), Jeff Montero (project manager), George DeLullo (regional QA specialist),  
Terry Keller (sample coordinator), Jennifer Krueger (sample coordinator), Julie Brossman  
(admin support); Brian Pyles, Paul Open + Richard Eustrice (priority sampling team - did both  
reconnaissance + soil sampling); Mike Coffee + Carrie Fingeret (soil team); Tom Vanderzweel,  
Karin Mainzhausen + Karen Berry (reconnaissance team); Bob Purtee + Albert Munoz  
(recon. team); Noel Anderson (Field Health + Safety Officer), Mike Grasso (Geographic  
Information Systems Specialist), Krista Lippoldt (Quality Assurance Coordinator)  
(All people with CDM Federal or another branch of CDM - Inc, Etc, etc.)

**Abbreviations:**

- IFF - Information Field Form (questionnaire + sketch filled out by reconnaissance team during initial residential contact - interviews, inspects attic, sketches property)
- FSDS - Field Sample Data Sheet - filled out by soil sampling team during subsequent soil sampling visit.
- Recon. - reconnaissance
- MOD form - Record of Deviation / Request for Modification form



Note: Record Applicable Field Plan Sections and SOPs for Each Subject Checked

General Sampling Procedures

Y/N/NA

- 1) a. Does field crew have operating procedures for field work on site? Y  
 Field Plan(s): (specify Revision No. or Date Final SAP (4/30/02)) Y  
 See ← \* Tech SOPs (specify TBOP 2-1, 1-2, 2-2, 4-1, 4-2 - defined on p. 1) Y  
 below Equipment Procedures (specify TBOP 4-5 equipment decon) Y  
 b. Is required health and safety documentation on site? (specify: Libby Field office) Y  
with Health & Safety Officer.
- 2) Were sampling locations selected as planned? Y  
~~If No~~, explain Sampling locations selected based on recon. team information + sketch on the IFF, soil teams note locations on IFF sketch
- 3) Were samples collected starting with the least likely contaminated and proceeding to the most likely contaminated? NA  
 Remarks ~~If No~~ Each team has ~ 5 sets of trowels + bowls so each sample is collected using clean equipment. Soils with gross amounts of vermiculite present are not sampled - size + volume are noted and the area photographed
- 4) Was sampling equipment protected from possible contamination prior to sample collection? Y  
~~If No~~, explain Equipment covered with foil after cleaned
- 5) If equipment was cleaned in the field, were described procedures used? N  
 If No, explain Site-specific SOP (CDM-LIBBY-05) was followed with the exception that equipment was not cleaned with nikonox detergent - only DI water was used. This was discussed with Dechert. It is generally believed that the detergent will not be needed; the equipment blanks and rinse blanks will determine this for sure. A MOD form will be completed to document this. MOD. form # 000044 was completed + submitted for approval.
- 6) What field instruments were used during this investigation? Primarily soil sampling equipment, GPS unit, digital camera

\* Site Specific SOPs: CDM-LIBBY-03 (Completion of PSDs)  
 CDM-LIBBY-04 (Completion of IFFs)  
 CDM-LIBBY-05 (Soil Sample Collection)

Y/N/NA

7) Were field instruments calibrated as described?

NA

If No, explain \_\_\_\_\_

8) Were calibration procedures documented in the field notes?

NA

Remarks \_\_\_\_\_

9) Were nonconforming instruments (those which were not functioning properly) segregated and not used?

NA

10) Were nonconforming instruments or items documented as required?

NA11) Were the samples <sup>properly handled</sup> ~~chemically preserved~~ in the field?Y~~If No~~, explain Samples labeled + double-bagged to maintain sample integrity

12) Were the samples iced?

NA

13) Were samples for selected parameters field filtered?

NA

If Yes, list parameters and describe procedures. \_\_\_\_\_

14) What are the field change control requirements for this project? Circle One.

Client-Specified Form

QA Manual "Change Request Form"

Record of Communication

Were requirements followed?

YRecord of Deviation / Request for Modification (MOD forms) are used.Prior to audit was provided with forms 000033 (change index ID format), 000034 (change to IFF), 000035 (nitrates sample not collected first week - no lab), 000036 (change to FSDS to include equipment blanks), and 000037 (to wet the area where soil samples are collected)

Waste, Sludge, Soil/Sediment Sampling

- 1) What procedures including equipment were used to collect soil/sediment samples? Usually a 5-point composite (unless a very small garden - then maybe only 3 pt), 1" depth for lawn, 6" depth for gardens, driveway, etc. Area is wetted to minimize dust generation (intense during the audit), used stainless steel trowels + mixing bowls.
- 2) Were the soil/sediment samples well mixed prior to placing the sample in the sample container? Y
- 3) Note any deficiencies observed during the collection of the soil/sediment samples None observed.
- 4) Total number of samples collected: Team 1 = 3 (lawn, garden, driveway)  
Team 2 = 2 at first property (lawn, garden)  
= 3 at 2nd property (lawn, garden, driveway)
- 5) Sample collector: Team 1 - Brian Pyles  
Team 2 - Mike Coffee

Comments: New team members are paired with experienced samplers for training. Soil sampling is straightforward since the property has been previously evaluated and sketched by the recon. team. It was brought up and discussed at a morning meeting that soil teams are occasionally finding vermiculite when the reconnaissance teams did not find or note vermiculite. Discussion reminded all teams to be especially careful + observant so it is not missed, but it was also noted that having two different teams visit the property lessens this chance.

## QUALITY ASSURANCE/QUALITY CONTROL

Y/N/NA

(While all of these QC procedures are not necessarily used, please check on the specific techniques which were described in the field protocols.)

1) Did the sampling personnel use any field trip blanks? N

2) Did the sampling personnel create any preservative blanks? NA

If Yes, to either of the above questions, list the type and handling of the blanks \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3) Were any equipment blanks collected? Y

If Yes, list: 1 soil blank per day - silica sand mixed in a team's composting bowl w/ trowel. 1 aqueous rinseate blank was also taken (1/day) for this week. (will do rinsates during 2 later weeks in the field season). The Final SAP calls for the use of ASTM Type II water (p. 7-3) will be used, distilled water was used instead - a MOD form will be completed to document this. MOD form #000040 was completed and in for approval and review. 7/17/02

4) Were any duplicate samples collected? Y

If Yes, list the types (parameter coverage, etc.) and describe their handling: Soil duplicates are taken by the field teams; each team is responsible for collecting them at a rate of at least 1/30. The duplicate is taken at the same time as the natural sample.

5) Were any spiked samples used? N

If Yes, list the types (parameter coverage, etc.) and describe their handling: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## CHAIN OF CUSTODY AND SAMPLE HANDLING

Y/N/NA

- 1) Were split samples offered to the site owner or facility representative? NA
- 2) Was a receipt for samples given to the site owner or facility representative prior to leaving the site? NA
- 3) Were all ~~sample tags~~ and chain-of-custody forms signed by sample collector(s)? Y
- 4) Were chain-of-custody records completed for all samples? CoCs completed by field team prior to relinquishing to sample coordinator (Jennifer Krueger). An isolated concern was noted that comments inappropriate for submitting samples blind to the lab were included on CoCs 2662, 2663, + 2664 (eg, "vermiculite present", "duplicate" etc.). This was the first CoC completed by this sampler, and it was corrected immediately. Y
- 5) Were sampling tag numbers and laboratory traffic report form numbers cross-referenced to chain-of-custody forms? No other CoCs were observed with this problem. NA
- 6) Were chain-of-custody form numbers recorded in the field log book? Y/N  
*Soil tags are not 100% consistent with recording the CoC # in the logbooks. Reviewed subsequent evidence provided by FTL on 7/16/02.*
- 7) Were all samples properly sealed at the time of collection? Y  
*Soil samples are all double-bagged.*
- 8) Were samples kept in a secure place after collection? Y  
*Maintained in cooler in vehicle during day, sample coordinator keeps samples to be shipped locked in the office.*
- 9) Were samples stored to maintain 4°C, if required? NA
- 10) Were the samples shipped to a CLP laboratory? NA  
If Yes: Were the traffic report forms filled out properly? \_\_\_\_\_
- \* Were the samples properly packed for shipment? \_\_\_\_\_  
If No: Explain: \_\_\_\_\_
- Yes, samples were properly packed for shipment. Packed according to CDM TSOP-2-1 with modifications as approved in the SAP (ie, vermiculite is not used in shipping, no bubble wrap needed, no ice needed, cooler not lined with plastic bag since all samples already double bagged).  
*Observed Jennifer Krueger package cooler for shipment to Todd Burgess (CDM Soil Lab - Denver) for processing. CoC forms 2647, 2662, 2663, 2664 properly relinquished to lab, cooler properly taped. Custody seals properly attached to opposite side / corners of cooler.*

## FIELD DOCUMENTATION

Y/N/NA

- 1) Describe required field documentation: Field documentation is extensive - team members fill out IFF, soil teams fill out FSISs (+ add to IFF), both teams fill out logbooks. Integrating information kept in the logbooks.

- 2) Was all required information recorded? Y

Brief summary of information included: IFF - mainly based on resident interview - teams commended on being friendly + professional. A property sketch is required containing enough detail so soil teams can easily sample later. Each residence gets an IFF with a BD # assigned, except for an apartment complex, where 1 BD number is assigned to the complex, and several IFFs will be completed under the same <sup>BD</sup> # (a MOD form will be completed to clarify this). Also, a footprint sketch (to scale) is completed if there is vermiculite present in the attic or walls. If No, explain FSISs for soils - sample index ID (CS#), Location ID (SP# tied to GPS location), soil teams can only select <sup>from</sup> a set of sample groups (a list provided by sample coordinator) to ensure consistency in database (eg - flower bed is always flower bed, not flower garden or no side yard, only front or back yard, etc.). Minor deficiencies noted: initial/sign + date all lined out areas, note duplicate CS# in spruce provided, Completed by /QC by needs to be signed off (note the other field member checks the paperwork - this significantly lessens errors).

- 3) Was sampling required to be documented with photographs? Y/N

If Yes, were documentation requirements met? Yes - photo of front of every house is taken, gross vermiculite areas not sampled photographed, anything judged to be unusual / unique may be photographed.

- 4) Were field logbooks required? Y

a) Was the Field logbook cover properly completed? Y

b) Was a Table of Contents used or were pages reserved for it? Y

c) Were logbook corrections handled as required? Y

d) Were unused logbook pages properly lined out? Y/N\*

e) Were logbook review requirements met? Y

\* Minor deficiencies on logbooks. Generally the correct "upfront" information is included each day (team members, activity, weather, PPE, etc.) but is sometimes missing - a list is glued to the inside cover of each logbook so this can be completed. Team members frequently do not sign the logbook over to the other team member if they switch who is recording the notes. Some blank lines were noted. One team (logbook 100070) was filling out all sampling information for those residences they were planning to visit that day, then filling in times later. The pages were then not in chronological order (11 AM on the page before 9 AM etc.). Also, information was recorded below the lined out areas. Seequent example of logbook page provided by IFTL on 7/16/02. Signatures needed.

## GENERAL COMMENTS:

The Libby CSS field teams should be commended for their work on this project - although the sampling is straightforward, this project is unique because of the extent of field documentation required and the amount of direct interaction with the residents.

- Morning meetings are well-organized, essential to communicate field changes, any new concerns, reminders, etc.
- Dee Warren put together a new field team <sup>member</sup> orientation information packet.
- IFF paperwork looked good, consistent - make sure to initial/sign + date line cuts.
  - Make sure critical info included on property sketch
  - \* MOD form needed to assign IBD # to an apartment complex
- FSDS also good, again sign/date crossouts.
  - \* MOD form because alconox detergent is not used in cleaning. MOD form # 000044 (7/15/02) was completed and submitted for approval. 7/17/02
- Photographic documentation good - digital cameras downloaded each day, organized by Mike Grasso, will back up pictures to CD when has enough files.
- QC sample collection good
  - \* MOD form that ASTM type II water is not used for aqueous rinsates. MOD form # 000040 (6/29/02) was completed and submitted for approval. 7/17/02
- Files and paperwork well-organized and securely kept - especially important because of confidentiality issues.
- Logbooks - see notes on p. 7. Evidence of subsequent logbook entries provided by the FTL.
- Dee Warren had not yet done a 2% screening field check of all paperwork - 7/17/02 will start doing this ASAP.
- May be an issue with getting laboratory preparation samples (blanks and duplicates) done by Todd Burgess into the database - team had not yet communicated to Todd that he needed to collect these samples. Sample coordinators to determine a way to assign index ID (CS #'s) to the samples that Todd will be generating ASAP. Sample coordination team is addressing this issue. 7/17/02
- Late issues - discussion with Krista Lippoldt on 6/25/02 noted that each team collecting duplicates at a rate of 100 many submit too many ~~duplicate~~ <sup>duplicate</sup> being collected. Discussed with Jerry Keller who will work with field teams to correct this.

## FIELD DEBRIEFING

Proficiencies/Attaboys/Staff Notified: Well-organized, professional + thorough,

Observations/Concerns/Staff Notified: Expected concerns mainly over logbooks, Concern that Laboratory QC sampling had not been worked out between field team + Todd Burger in Denver; teams need to continue the diligence + QC checking of paperwork that was observed - the accuracy / thoroughness on this documentation is key to the project,

Discussed Issues w/ Dee Warren, Jeff Montero, Dave Schroeder.

Deficiencies Noted/ Staff Notified: ① Logbooks - complete up front information, sign over to other field team member, don't complete logbook ahead of time, do not write below the lined out area. MOD forms required for ① Alconox detergent not used in decon; ② ASTM Type II water not used for rinsates ③ Only 1 BD# assigned to an apartment building while multiple IFFs w/ same BD# will be filled out for the residents. Issues discussed at meeting with Dee Warren, Dave Schroeder + Jeff Montero

Action Taken on Deficiencies: ① Logbook issues were discussed first with Dee and PMs, then with the field team at the morning meeting on 6/20/02. MOD forms will be used to address remaining issues, MOD forms were generated to address the above deficiencies and subsequent field logbook entries were submitted to resolve logbook

Field Team Leader notified ☒ Y/N When? Dee Warren, Dave Schroeder 6/19/02

Project Manager notified ☒ Y/N When? Jeff Montero 6/19/02,

\* Jeff Montero designated the auditor as the QA Manager for the project. Areas on page 1-8 of the SAP + Section 7 of the SAP. Will regularly communicate with field personnel on QA issues. This designation was made after the auditor had completed the audit. 7/17/02





# Record of Deviation/ Request for Modification

to the

Libby Sampling and Quality Assurance Project Plan

Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren Title: CSS Task Leader  
Company: CDM Date: 6/29/02

Description of Deviation:  
Locally available deionized or distilled water will be used to collect rmsate samples.

Field Logbook and page number where deviation is documented: 100057 pg 69

Reason for Deviation:  
ASTM Type II water was deemed unnecessary as the contaminate of concern is Asbestos

Potential Implications of this Deviation:  
None

Duration of Deviation (circle one):  
Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):  
See attached copy of logbook pages.

Technical Review: \_\_\_\_\_ Date: \_\_\_\_\_  
(Volpe Project Manager or designate) does not apply to CSS

Quality Assurance Review and Approval: \_\_\_\_\_ Date: \_\_\_\_\_  
(Quality Assurance Coordinator or designate)

Approved By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_  
(USEPA RPM, OSC, or SSC)



# Record of Deviation/ Request for Modification

to the

Libby Sampling and Quality Assurance Project Plan

Instructions to Requester: Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager and fax copy to SRC.

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren

Title: CSS Task Leader

Company: CDM

Date: 6/29/02

## Description of Deviation:

More detail on the collection of BD#. The same BD# will be used for apartments or business at the same address, but the apartment # or suite # will be placed in the structure description field. Field Logbook and page number deviation is documented on: 100057 pg 71

## Reason for Deviation:

For database tracking purposes so the same address will not have multiple GPS coordinates for multiple BD#s that are in the same building.

## Potential Implications of this Deviation:

Improved tracking of BD#s and address in the Libby Database.

## Duration of Deviation (circle one):

Temporary

Date(s): \_\_\_\_\_

Resident address(es): \_\_\_\_\_

Permanent

(complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

Insert paragraph into Record GPS Locations Section on page 4-8.

## Technical Review:

(Volpe Project Manager or designate) does not apply to CSS

Date: \_\_\_\_\_

## Quality Assurance Review and Approval:

(Quality Assurance Coordinator or designate)

Date: \_\_\_\_\_

## Approved By:

(USEPA RPM, OSC, or SSC)

Title: \_\_\_\_\_

Date: \_\_\_\_\_

000044

**Record of Deviation/  
Request for Modification**to the  
Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren

Title: CSS Task Leader

Company: CDM

Date: 7-15-02

**Description of Deviation:**

Alconox detergent is not used as part of the decontamination procedures.

Field Logbook and page number deviation is documented on: 10057 <sup>7-15-02</sup> page 132

**Reason for Deviation:**

Asbestos is not dissolved by detergent. Therefore the use of detergent in the decon procedure is not needed.

**Potential Implications of this Deviation:**

None

**Duration of Deviation (circle one):**

Temporary

Date(s): \_\_\_\_\_

Resident address(es): \_\_\_\_\_

Permanent

(complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

SIP-Specific SOP for Soil Sample Collection - see attached copy of logbook documentation.

Technical Review: \_\_\_\_\_

(Volpe Project Manager or designate) does not apply to CSS

Date: \_\_\_\_\_

Quality Assurance Review and Approval: \_\_\_\_\_

(Quality Assurance Coordinator or designate)

Date: \_\_\_\_\_

Approved By: \_\_\_\_\_

(USEPA RPM, OSC, or SSC)

Title: \_\_\_\_\_

Date: \_\_\_\_\_



# Record of Deviation/ Request for Modification

to the  
Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dec. Warren Title: CSS Task Leader  
Company: CDM Date: 6/29/02

## Description of Deviation:

Structure sketches will only include approximate dimensions of the attic.

Field Logbook and page number deviation is documented on: 100057 page 108

## Reason for Deviation:

The information required from the sketch is used to determine approximate volumes of vermiculite insulation, so only dimensions of the attics are needed

## Potential Implications of this Deviation:

Loss of information regarding room dimension details.

## Duration of Deviation (circle one):

Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

① Page 4-6 Structure sketch. The sketch will not include all floors will only include approximate dimensions of the attics. ② see attached copy of logbook page.

Technical Review: [Signature]  
(Volpe Project Manager or designate) does not apply to CSS

Date: 7/2/02

Quality Assurance Review and Approval: [Signature]  
(Quality Assurance Coordinator or designate)

Date: 7/9/02

Approved By: [Signature] Title: RPM  
(USEPA RPM, OSC, or SSC) 3282-116-PP-SAMP-15095

Date: 7/2/02

Location Libby, MT Date 6/29/02  
Project / Client Libby Asbestos Site  
Valpe Center EPA Region 8

vermiculite observed on property.

1110- E-mail Jim Christensen regarding property at 11340 Riverside Drive, Try to provide information for letter requested by agent.

1150- E-mail Jeff Montore to add Libby County Animal Shelter to priority sampling list.

1433- Soils team #3 begins sampling on California.

1445- Prepare Modification Form #000038:

A sketch of the structure is only to be completed if vermiculite insulation is found in the home.

The sketch will be used by removal/remedial contractors to determine approx. volume of

vermiculite, so this step was determined not to be needed for homes not containing vermiculite

insulation. Also the detail required on the

sketch was reduced to just require only an

estimated dimensions of the attic. Changes to

SAP: Page 4-6 Structure Sketch: sketch will no longer include all floors. Sketch will

approximate dimensions of the attic.

Page 7 of Completion of Property Information

Field Form guidance. There will no longer be

Location Libby, MT Date 6/29/02  
Project / Client Libby Asbestos Site  
Valpe Center EPA Region 8

one sheet completed per floor.

1502- Prepare Modification Form #000039: Rinsate preparation method changed to EPA 100.2.

Changes to SAP: Page 6-1 section 6.1 Analytical Methods. Rinsate preparation method changed to EPA Method 100.2 the analytical method will remain the same. Change was made so EMSL mobile

Laboratory could perform the analysis.

1513- Prepare Modification Form #000040:

Rinsate samples are collected using locally available Deionized or distilled water.

Changes to SAP: page 5-5 Section 5.4.2

2nd paragraph, 2nd to last sentence

"...locally available deionized or distilled water will be used to collect the rinsate sample."

1540- Prepare Modification Form #000041:

The same BD#s will be used for apartment buildings or buildings with multiple

businesses see page 7.



**Record of Deviation/  
Request for Modification**

to the  
**Libby Sampling and Quality Assurance Project Plan**

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 3/8/02) (app. pending) (app. pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approved 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren Title: CSS Task Leader  
Company: CDM Date: 6/23/02  
29 JUN 2002

Description of Deviation:  
Change Anisate preparation method to EPA Method 100.2

Field Logbook and page number deviation is documented on: Logbook 100057 pg 109

Reason for Deviation:  
Method for preparation changed because contracted laboratory could not prepare the samples by the method provided in the SAP.

Potential Implications of this Deviation:  
Inconsistency between sample preparation of water samples collected between different SAPs. Issue discussed with Mary Goldade and deemed to be a minimal concern.

Duration of Deviation (circle one):  
Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):  
See attached copy of logbook page

Technical Review: [Signature] Date: 7/2/02  
(Volpe Project Manager or designate) does not apply to CSS

Quality Assurance Review and Approval: [Signature] Date: 7/9/02  
(Quality Assurance Coordinator or designate)

Approved By: [Signature] Title: RPM Date: 7/2/02  
(USEPA RPM, OSC, or SSC)

Location Libby, MT Date 6/29/02  
Project: Client Libby Asbestos Site  
Valpe Center EPA Region 8

vermiculite observed on property.

1110 - E-mail Jim Christensen regarding property at 113 W Ravenside Drive, Topy to provide information for letter requested by agent.

1150 - E-mail Jeff Montero to add Central County Annual Shelter to priority sampling list.

1433 - Soils team #3 begins sampling on California.

1445 - Prepare Modification Form #000038:

A sketch of the structure is only to be completed if vermiculite insulation is found in the home.

The sketch will be used by removal/remedial contractors to determine approx. volume of

vermiculite, so this step was determined not to be needed for homes not containing vermiculite

insulation. Also the detail required on the sketch was reduced to just require only an

estimated dimensions of the attic. Changes to SAP: Page 4-6 Structure Sketch: Sketch will

no longer include all floors. Sketch will approximate dimensions of the attic.

Page 7 of Completion of Property Information Field Form Guidance. There will no longer be

109  
Location Libby, MT Date 6/29/02  
Project: Client Libby Asbestos Site  
Valpe Center EPA Region 8

one sheet completed per floor.

1502 - Prepare Modification Form #000039: Rinsate preparation method changed to EPA 100.2.

Changes to SAP: Page 6-1 Section 6.1 Analytical Methods. Rinsate preparation

method changed to EPA Method 100.2 the analytical method will remain the

same. Change was made so ENSC mobile Laboratory could perform the analysis.

1513 - Prepare Modification Form #000040: Rinsate samples are collected using

locally available Deionized or distilled water.

Changes to SAP: page 5-5 Section 5.4.2 2nd paragraph, 2nd to last sentence

"...locally available deionized or distilled water will be used to collect the

rinsate sample."

1540 - Prepare Modification Form #000041: The same 80#s will be used for apartment

buildings or buildings with multiple businesses see page 71.

Duba



# Record of Deviation/ Request for Modification

to the  
Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren Title: CSS Task Leader  
Company: CDM Date: 6/29/02

Description of Deviation:  
Locally available deionized or distilled water will be used to collect rinseate samples.

Field Logbook and page number(s) to which this deviation is documented: 100057 pg 69  
Reason for Deviation:  
ASTM Type II water was deemed unnecessary as the contaminant of concern is Asbestos

Potential Implications of this Deviation:  
None

Duration of Deviation (circle one):  
Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):  
See attached copy of logbook pages.

Technical Review: [Signature]  
(Volpe Project Manager or designate) does not apply to CSS

Date: 7/2/02

Quality Assurance Review and Approval: [Signature]  
(Quality Assurance Coordinator or designate)

Date: 7/9/02

Approved By: James Christensen  
(USEPA RPM/OSC, or SSC)

Title: RPM

Date: 7/2/02



Location Libby, MT Date 6/29/02  
Project / Client Libby Asbestos Site  
Volpe Center EPA Region 8

vermiculite observed on property.

1110 - E-mail Jim Christensen regarding property at 11340 Riverside Drive, Twp 4 to provide information for letter requested by agent.

1150 - E-mail Jeff Montero to add Lincoln County Animal Shelter to priority sampling list.

1433 - Soils team #3 begins sampling on California.

1445 - Prepare Modification Form #000038:

A sketch of the structure is only to be completed if vermiculite insulation is found in the home.

The sketch will be used by removal/remedial

contractors to determine approx. volume of

vermiculite, so this step was determined not to be need for homes not containing vermiculite

insulation. Also the detail required on the

sketch was reduced to just require only an

estimated dimensions of the attic. Changes to

SAP: Page 4-6 Structure Sketch: Sketch will

no longer include all floors. Sketch will

approximate dimensions of the attic.

Page 7 of Completion of Property Information

Field Form Guidance. There will no longer be

109  
Location Libby, MT Date 6/29/02  
Project / Client Libby Asbestos Site  
Volpe Center EPA Region 8

one sheet completed per floor.

1502 - Prepare Modification Form #000039: Rinsate preparation method changed to EPA 100.2.

Changes to SAP: Page 6-1 section 6.1 Analytical Methods. Rinsate preparation

method changed to EPA Method 100.2 the analytical method will remain the

same. Change was made so EMSL mobile Laboratory could perform the analysis.

1513 - Prepare Modification Form #000040: Rinsate samples are collected using

locally available Deionized or distilled water.

Changes to SAP: page 5-5 Section 5.4.2 2nd paragraph, 2nd to last sentence

"...locally available deionized or distilled water will be used to collect the

rinsate sample."

1540 - Prepare Modification Form #000041: The same B0's will be used for apartment

buildings or buildings with multiple businesses see page 71.

6/19/02

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Location Libby MT

Date 6/19/02

Project / Client Libby Asbestos Site

Volpe Center

EPA Region 8

Nevada, Minnesota, and Dakota.

Soil Team #3: B. Hunt and B. Hiltz

Logbook # 100074 working on Louisiana Ave

Soil Team #4 - Priority Property Team:

B. Pyles, P. Opem, R. Eustice Logbook #

100073 working on priority properties

and H42.

PPE - attic inspection = C, verbal interview = D,

soil sampling = ~~B~~ <sup>B</sup> ~~6-19-02~~

All activities will be conducted in accordance

with the Final SAP for the RIOS Libby Asbestos

Site DU4, April 2002

0800 Attend morning meeting. Topics

- Use same BD# for apartments at the same address, but place apartment # in the structure description field. Requires completing MOD form.

0915 Receive call from David Romano (osc)

Concerning property at 86 Peliga Drive.

Mr. Romano requests dust sampling be

conducted in the <sup>DU 6-19-02</sup> basement bedroom

and laundry room.

0920 Receive call from EPA Int Center

Dore W. Jones

**Record of Deviation/  
Request for Modification**

to the

Libby Sampling and Quality Assurance Project Plan

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File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 (NA)

Requester: Dee Warren  
Company: CDM

Title: CSS Task Leader  
Date: 6/29/02

## Description of Deviation:

More detail on the collection of BD#. The same BD# will be used for apartments or businesses at the same address, but the apartment # or suite # will be placed in the structure description field. Field Logbook and page number deviation is documented on: 100057 pg 71

## Reason for Deviation:

For database tracking purposes, so the same address will not have multiple GPS coordinates for multiple BD#s that are the same building.

## Potential Implications of this Deviation:

Improved tracking of BD#s and address in the Libby Database

## Duration of Deviation (circle one):

Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

Insert paragraph into Record GPS Locations Section on page 4-8.

## Technical Review:

(Volpe Project Manager or designate) does not apply to CSS

Date:

7/2/02

## Quality Assurance Review and Approval:

(Quality Assurance Coordinator or designate)

Date:

7/9/02

## Approved By:

(USEPA RPM, OSC, or SSC)

Title:

RPM

Date:

7/2/02

**Record of Deviation/  
Request for Modification**  
to the

Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren  
Company: CDMTitle: CSS Task leader  
Date: 6/29/02

## Description of Deviation:

See page 110 of Logbook 100057. Modification  
to IFF formField Logbook and page number deviation is documented on: 100057 page 110

## Reason for Deviation:

To improve consistency between form completion among  
multiple persons.

## Potential Implications of this Deviation:

Improved consistency for the completion of IFFs

## Duration of Deviation (circle one):

Temporary

Date(s): \_\_\_\_\_

Resident address(es): \_\_\_\_\_

Permanent

(complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

See attached copy of logbook pages. These changes will  
modify the IFF completion SOP.

## Technical Review:

(Volpe Project Manager or designate) does not apply to CSS

Date:

7/2/02

## Quality Assurance Review and Approval:

(Quality Assurance Coordinator or designate)

Date:

7/9/02

## Approved By:

(USEPA RQM, OSC, or SSC)

Title:

RQM

Date:

7/2/02

BD# \_\_\_\_\_

**LIBBY ASBESTOS PROJECT**  
**Contaminant Screening Study**  
**Primary Structure and Property Assessment Information Field Form**

Field Logbook No.: \_\_\_\_\_ Page No.: \_\_\_\_\_ Site Visit Date: \_\_\_\_\_  
 Address: \_\_\_\_\_ Structure Description: \_\_\_\_\_  
 Occupant: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Owner (if different than occupant): \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Sampling Team: \_\_\_\_\_  
 Field Form Check Completed by (100% of forms): \_\_\_\_\_  
 Screening Field Check Completed by (2% of forms): \_\_\_\_\_

Data Item	Value	Notes
<b>HOUSE ATTRIBUTES</b>		
Property Description	Residential Industrial Commercial	
Surrounding Land Use	Residential Industrial Commercial School Mining Other: _____	
Year of Construction	_____ Unknown	
Square Footage		
Construction Material	Wood frame Masonry/Stone Other: _____	
Number of Floors Above Ground	1 2 3 Other: _____	
Number of Rooms Per Floor Above Ground	1: _____ 2: _____ 3: _____ Other: _____	
Basement	Yes No	
Heating Source	Wood/Coal Electric Propane/Gas Other: _____	
Heat Distribution	Forced air Radiant Other: _____	

## CSS INFORMATION FIELD FOR (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>OCCUPANT INFORMATION</b>		
Number of Adults/Employees	0   1   2   3   4 5-15   16-20   21-30   >30	
Number of Children	0   1   2   3   4 Other: _____	
Years at Location	<1   1-5   5-10   10-15   >15	
Was the residence/building remodeled?	Yes   No If yes, When (years):   <2   2-5   >5 Where:   Attic   Living Areas Garage   Basement Other: _____	
Has resident/business purchased any Libby vermiculite materials from W.R. Grace in the past?	Yes   No	
Has the property at this location been used for a for-profit enterprise of distributing, treating, storing, or disposing of Libby vermiculite?	Yes   No	
Are there any known areas of exposed vermiculite?	Yes   No If yes, Where:   Ceiling   Walls Floors   Attic Other: _____	

**CSS INFORMATION FIELD FORM (continued)**

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>INDOOR ASSESSMENT</b>		
Vermiculite Insulation Past or Present	Attic: Yes No NA Unknown Walls: Yes No NA Unknown Basement: Yes No NA Unknown Crawl Space: Yes No NA Unknown Other: _____	Visual confirmation of current presence or absence required for attic.
Evidence of Physical Damage?	Yes No	
Evidence of Water Damage?	Yes No	
<b>OUTDOOR ASSESSMENT</b>		
Libby Amphibole Sources Present	Garden: Yes No NA Yard: Yes No NA Stockpiles: Yes No NA Other: _____	
Proximity to Other Properties with Potential Sources of Libby Amphiboles	Next door Within same block Other: _____ Unknown	

## CSS INFORMATION FIELD FORM (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>EXPOSURE ASSESSMENT</b>		
Type and Frequency of Activity Near Vermiculite Material - Indoor	Frequency: Once a day Once a week Once a month Once a year Not Applicable	Not Applicable applies when no vermiculite is present on the property.
	Duration of Contact: <1 hour 1-2 hours 2-4 hours >4 hours Not Applicable	
	Extent of Contact: Heavy Moderate Light Not Applicable	
Type and Frequency of Activity Near Vermiculite Material - Outdoor	Frequency: Once a day Once a week Once a month Once a year Not Applicable	Not Applicable applies when no vermiculite is present on the property.
	Duration of Contact: <1 hour 1-2 hours 2-4 hours >4 hours Not Applicable	
	Extent of Contact: Heavy Moderate Light Not Applicable	



## CSS INFORMATION FIELD FOP (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>CONTAMINANT SCREENING STUDY ASSESSMENT</b>		
<b>Occupant Information</b>		
Is there any knowledge of former miners, close relative of miners, or any highly exposed persons living or visiting the property?	Yes                  No Unknown	
Is the resident, past or present, diagnosed with an asbestos related disease?	Yes                  No Unknown	
<b>Indoor Information</b>		
Does the interior have Zonolite attic insulation?	Yes                  No Unknown	
Did the interior ever have Zonolite attic insulation?	Yes                  No Unknown              NA	NA applies if attic currently has ZAI.
Are there vermiculite additives in any of the building materials?	Yes                  No Unknown	
<b>Outdoor Information</b>		
Is there any evidence of primary source materials at or near the property?	Yes                  No Unknown	
Could this have been tracked indoors or otherwise spread outdoors on the property?	Yes                  No Unknown	
<b>Overall Assessment</b>		
Are primary source materials present at the property?	Yes                  No	
Where are primary source materials located?	Inside                  Outside Both                    NA	
<b>ADDITIONAL INFORMATION</b> _____		
_____		
_____		
_____		
_____		

**CSS INFORMATION FIELD FOR** 'continued)

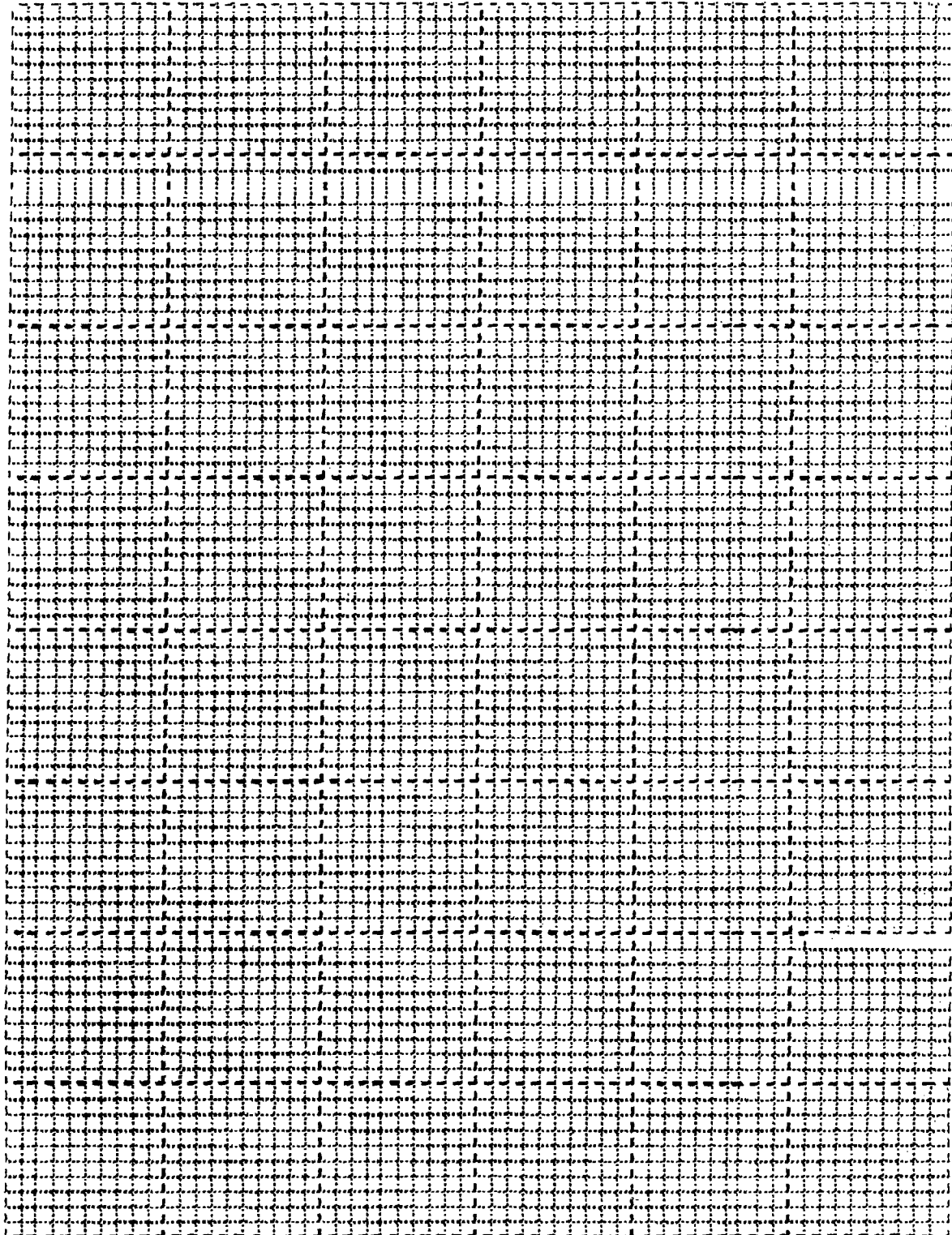
Address: \_\_\_\_\_

BD# \_\_\_\_\_

**FIELD DIAGRAM OF PROPERTY**

Identify important features (i.e. drainage, trees, gardens, structures, flowerbeds, utility poles, known underground utilities, suspected Libby amphibole source areas, sample locations, etc).

NOT TO SCALE



## CSS INFORMATION FIELD FOR\*\* (continued)

Address: \_\_\_\_\_

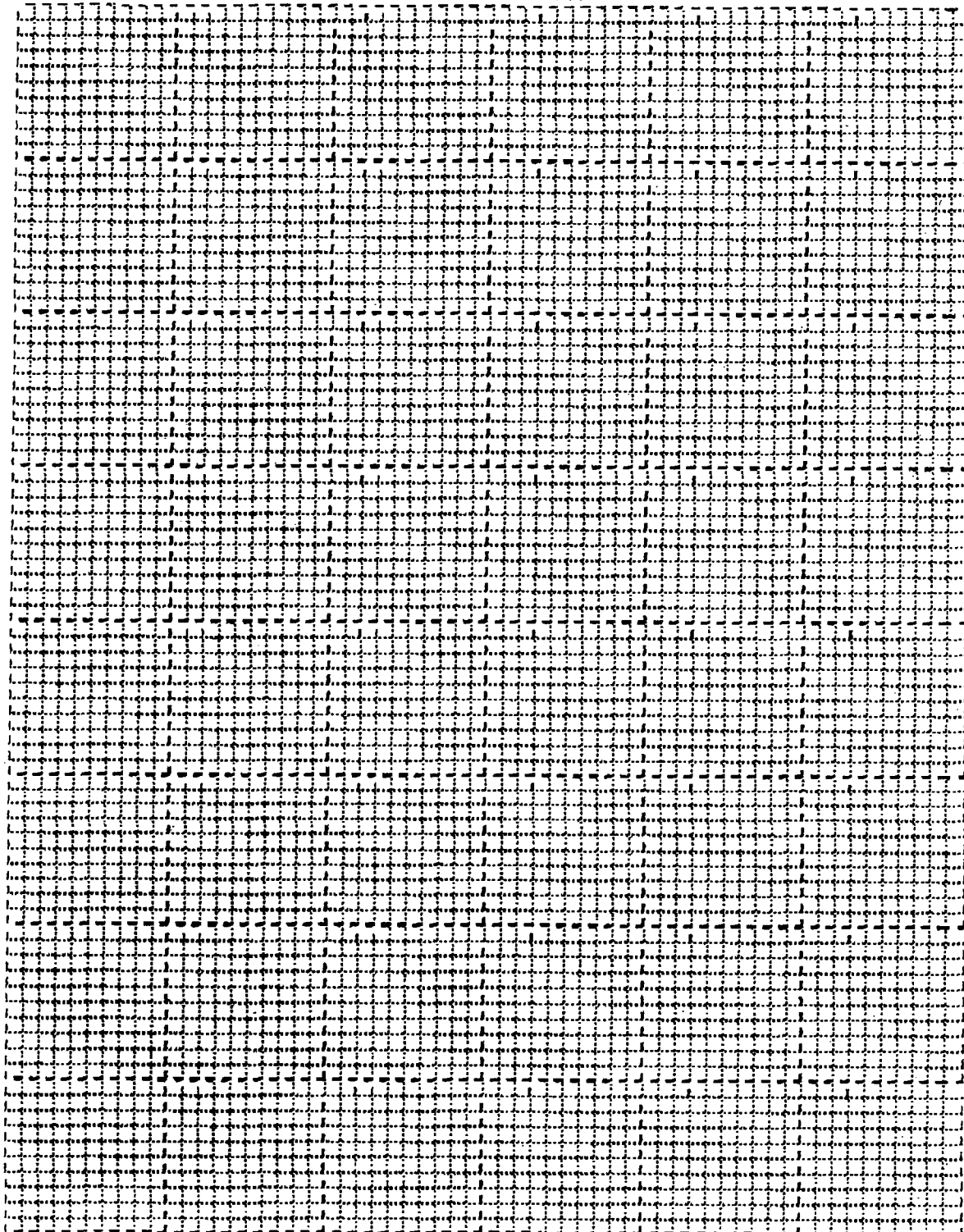
BD# \_\_\_\_\_

## FIELD DIAGRAM OF PRIMARY STRUCTURE

Floor of House (circle):    First       Second       Third       Basement

Include approximate dimensions of rooms and floor covering type. Use more than one diagram if needed. Completed only if ZAI is present.

Scale: 1/10" = 1 foot



110

Location Libby, MT Date 6/29/02  
 Project / Client Libby Asbestos Site  
Volpe Center EPA Region 8

- 11 1545 Prepare Modification Form 000042:  
 11 Version 3 of Primary Information Field Form.  
 a Following changes were made to the Form  
 11 ① Number of Adults/Employees: 0 is added  
 11 as an option to use when properties are  
 11 vacant. <sup>① 6-29-02</sup> (12)  
 11 ② Vermiculite ~~Insulation~~ <sup>① 6-29-02</sup> Part or Present  
 11 Portion of the Indoor Assessment: Unknown.  
 11 Added as an option to <sup>① 6-29-02</sup> all categories to  
 11 use when <sup>① 6-29-02</sup> ~~Insulation~~ question can not be  
 11 Answered. (12)  
 11 ③ Exposure Assessment: Not Applicable  
 11 Added to all categories as an option. To be  
 11 used when vermiculite is not present at the  
 11 property. (12)  
 b ④ Did the interior ever have Zonolite attic  
 11 insulation? : Question answer NA provided  
 11 to be used if attic currently has ZAL  
 c ⑤ Question "Is there evidence of primary  
 11 source materials near the property?" changed to  
 11 "Is there any evidence of primary source  
 11 materials at or near the property?"



## Memorandum

To: Document Control File

From: Jeff Montera

Date: June 11, 2002

Subject: Field Changes to the Libby SAP entitled, Final Sampling and Analysis Plan, Remedial Investigation, Contaminant Screening Study, April 2002

Field Changes:

### Standard Operating Procedure (SOP) Changes

SOP CDM-LIBBY-03, Completion of Field Data Sheets. The following change has been made:

- Category: FS = field sample and FD = field duplicate, Field Blank (lot or equipment). The field duplicate blank should be used to identify the FD of the parent FS. Field Blank lot should be circled when a lot blank is collected for the silica sand source. Field Blank equipment should be circled when an equipment blank is collected.

The updated SOP is attached.

SOP CDM-LIBBY-05, Site Specific Standard Operation Procedure for Soil Sample Collection, Section 5. The following change has been made:

- In an attempt to minimize dust generated and reduce the level of protection to level D during soil sample collection, the samplers will be wetting the area where the soil is collected.

### Record of Deviation/Request for Modification Form

Two changes were made to this form:

- A signature from the Volpe Center is not required for CSS Modifications (no tech oversight)
- The remedial project manager (RPM) was added as an accepted approval signature for EPA.

3282-116-PP-SAMP-14720

Libby Asbestos RI SAP

6/11/2002

Page 2

The updated form is attached.

CSS Field Sample Data Sheet for Soil

One change was made to this form:

- Field blank was added as a category option

The updated form is attached

# Completion of Field Sample Data Sheets

Project: Libby Asbestos Remedial Investigation - Contaminant Screening Study (CSS)

Project No.: 3282-116

Document No.: CDM-LIBBY-03

Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_

Technical Reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

EPA Approval: \_\_\_\_\_ Date: \_\_\_\_\_

A field sample data sheet (FSDS) must be completed using the following guidance.

## Definitions:

Owner – person who owns a residential property (may or may not be the current occupant), or the person who owns a commercial property.

Sample Coordinator – person responsible for the custody of all field paper work and samples collected

## Field Sample Data Sheet for Soil

**Sheet No.:** Pre-assigned unique sequential sheet number. Completed by sample coordinator.

**Scenario No.:** Scenario numbers are specific to the Phase II sampling program and do not apply to the CSS. "NA" should be placed in this blank.

**Field Logbook No.:** The logbook number being used to record information specific to the samples on the FSDS.

**Page No.:** Page number in logbook on which information regarding the samples on the FSDS is recorded.

**Sampling Date:** Date samples are collected, in the form MM/DD/YY.

**Address:** The address of the property being sampled. Addresses are to be entered in the following format:

Street number – Direction – Street Name – Street Abbreviation

# Completion of Field Sample Data Sheets

Where:

Street number = the number of the street address

Direction = the abbreviation of the street direction (N, S, E, or W), when applicable

Street name = correct spelling of the street name

Street abbreviation = when applicable

Road - Rd

Avenue - Ave

Street - St

Circle - Cr

Place - Pl

Boulevard - Blvd

Highway - Hwy

Examples: 510 N Mineral Ave  
607 N Michigan Ave  
521 Pipe Creek Rd

**Owner:** Name of the property owner (not necessarily the current occupant).

**Land Use:** Description of land use on which property is located.

**Sampling Team:** Company affiliation of sampling team.

**Names:** Full name of all members of the sampling team.

**Index ID:** Sample identification (ID) number. Index ID numbers for the CSS are in the form CSS-####. A set of available numbers is assigned to each sampling team by the sample coordinator.

**Location ID:** Unique identification number assigned to each sample location with a unique global positioning system (GPS) coordinate. For soil samples, location identifications (IDs) are in the form SP-####. A set of available numbers is assigned to each sampling team by the sample coordinator.

**Sample Group:** The sample group for soil samples collected for the CSS must be one of the following options:

Yard  
Garden  
Driveway  
Road  
Flower Bed

Field  
Walkway  
Park  
School



## Completion of Field Sample Data Sheets

**Location Description:** Description of the location where a soil sample was collected. If back yard, front yard, or side yard do not apply, use the other blank.

**Category:** FS = field sample and FD = field duplicate, Field Blank (lot or equipment). The field duplicate blank should be used to identify the FD of the parent FS. Field Blank lot should be circled when a lot blank is collected for the silica sand source. Field Blank equipment should be circled when an equipment blank is collected.

**Matrix Type:** The samples collected for the CSS will mostly be surface samples (0 to 1 or 0 to 6 inches). If a sample that is collected is not a surface sample, complete the other line using the following options: mining waste, subsurface soil, fill.

**Type:** Indicate the type of sample collected, grab or composite. If the sample is a composite sample, the number of subsamples must be provided.

**Time:** The time of sample collection, in military time.

**Top Depth:** Top depth of sample in inches below the ground surface.

**Bottom Depth:** Bottom depth of sample in inches below the ground surface.

**Grid, Quadrant, Section:** Specific to the grid, quadrant, and section the sample is collected in. Entry should follow the example below:

45C3

Where:

45 = Grid number  
C = Quadrant letter  
3 = Section number

05A1

Where:

05 = Grid number  
A = Quadrant letter  
1 = Section number

**Field Comments:** Any information specific to a sample. If vermiculite is present, this must be noted in the field comments section.

**Entered:** Completed at time of data entry.

**Validated:** Completed at time of validated data receipt.

**Completed by:** Initials of field team member that completes the FSDS.

## Completion of Field Sample Data Sheets

QC by: Initials of field team member that completes QC check of FSDS.

### Field Sample Data Sheet for Water

Water samples collected for the CSS will be rinsate samples. The field data sheet should be completed using the following guidelines.

**Sheet No.:** Pre-assigned unique sequential sheet number. Completed by sample coordinator.

**Scenario No.:** Scenario numbers are specific to the Phase II sampling program and do not apply to the CSS. "NA" should be placed in this blank.

**Field Logbook No.:** The logbook number being used to record information specific to the samples on the FSDS.

**Page No.:** Page number in logbook on which information regarding the samples on the FSDS is recorded.

**Sampling Date:** Date samples are collected, in the form MM/DD/YY.

**Address:** Does not apply to rinsate samples. Place NA in blank.

**Owner:** Does not apply to rinsate samples. Place NA in blank.

**Land Use:** Does not apply to rinsate samples. Place NA in blank.

**Sampling Team:** Company affiliation of sampling team.

**Names:** Full name of all members of the sampling team.

**Index ID:** Sample identification number. A set of available numbers is assigned to each sampling team by the sample coordinator.

**Location ID:** Does not apply to rinsate samples. Place NA in blank.

**Sample Group:** Does not apply to rinsate samples. Place NA in blank.

**Location Description:** Does not apply to rinsate samples. Place NA in blank.

**Category:** FS = field sample and FD = field duplicate. All rinsate samples are field samples.

## Completion of Field Sample Data Sheets

Matrix Type: Chose rinsate.

Field Comments: Any information specific to a sample.

Entered: Completed at time of data entry.

Validated: Completed at time of validated data receipt.

Completed by: Initials of field team member that completes the FSDS.

QC by: Initials of field team member that completes QC check of FSDS.



# Record of Deviation/ Request for Modification

to the  
Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: \_\_\_\_\_ Title: \_\_\_\_\_  
Company: \_\_\_\_\_ Date: \_\_\_\_\_

Description of Deviation:

Field Logbook and page number deviation is documented on: \_\_\_\_\_  
Reason for Deviation: \_\_\_\_\_

Potential Implications of this Deviation:

Duration of Deviation (circle one):

Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

Technical Review: \_\_\_\_\_ Date: \_\_\_\_\_  
(Volpe Project Manager or designate) does not apply to CSS

Quality Assurance Review and Approval: \_\_\_\_\_ Date: \_\_\_\_\_  
(Quality Assurance Coordinator or designate)

Approved By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_  
(USEPA RPM, OSC, or SSC)

# CONTAMINANT SCREENING STUDY

## FIELD SAMPLE DATA SHEET FOR SOIL

Scenario No.: \_\_\_\_\_ Field Logbook No: \_\_\_\_\_ Page No: \_\_\_\_\_ Sampling Date: \_\_\_\_\_

Address: \_\_\_\_\_ Owner: \_\_\_\_\_

Land Use: (circle) Residential School Commercial Mining Roadway Other ( )

Sampling Team: (circle) CDM PES Other \_\_\_\_\_ Names: \_\_\_\_\_

Data Item	Sample 1	Sample 2	Sample 3
Index ID			
Location ID			
Sample Group			
Location Description (circle)	Back yard Front yard Side yard Other _____	Back yard Front yard Side yard Other _____	Back yard Front yard Side yard Other _____
Category (circle)	FS FD _____ Field Blank (lot or equipment)	FS FD _____ Field Blank (lot or equipment)	FS FD _____ Field Blank (lot or equipment)
Matrix Type (Surface soil unless other wise noted)	Surface Soil Other _____	Surface Soil Other _____	Surface Soil Other _____
Type (circle)	Grab Comp. # subsamples _____	Grab Comp. # subsamples _____	Grab Comp. # subsamples _____
Sample Time			
Top Depth (in.)			
Bottom Depth (in.)			
Grid, Quadrant, Section			
Field Comments			
	Entered _____ Validated _____	Entered _____ Validated _____	Entered _____ Validated _____

Field Team	Initial
Completed by	
QC by	



# Record of Deviation/ Request for Modification

to the  
Libby Sampling and Quality Assurance Project Plan

Instructions to Requester: Fax to contacts at bottom of form for review and approval.

File approved copy with Data Manager and fax copy to SRC.

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren Title: CSS Task Leader  
Company: CDM Date: 6/10/02

## Description of Deviation:

Changes to IFF and IFF Completion Guidance Documents

Field Logbook and page number deviation is documented on: Logbook # 100057 page 16

## Reason for Deviation:

To collect more accurate information regarding owner/occupant  
in to track properties where usable primary sources are present.

## Potential Implications of this Deviation:

Additional tracking in Libby V2.

## Duration of Deviation (circle one):

Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

Add two questions to IFF ① Are primary sources present at the property?  
② Where are the primary sources materials located? See  
attached for changes to IFF Guidance Documents.

I Review: [Signature] Date: 6/12/02  
(olpe Project Manager or designate) does not apply to CSS

Assurance Review and Approval: [Signature] Date: 6/12/02  
(Quality Assurance Coordinator or designate)

By: J. Christianse  
(SEPA RRM, OSC, or SSC)

Title: RPM Date: 6/11/02

mrv3{1}.doc

## Changes to IFF and IFF Completion Guidance

Page 1 of 1



Close

From: Warren, Dec

To: Montera, Jeff

Cc:

Subject: Changes to IFF and IFF Completion Guidance

Sent: 5/22/02 3:50 PM

Importance: Normal

## Changes to IFF:

Two questions were removed from the occupant information section and now only appear in the CSS assessment section. These two questions are

1. Is there any knowledge of former miners, close relative of miners, or any highly exposed persons living or visiting the property?
2. Is the resident diagnosed with an asbestos related disease?

This change was made because the questions appeared on the IFF twice.

The question: Is the resident diagnosed with an asbestos related disease? was changed to Is the resident, past or present, diagnosed with an asbestos related disease?

Two questions were added to the CSS assessment and titled "Overall Assessment". These questions were added to have a way to track if primary sources were observed anywhere on the property and the general location in which they were observed.

1. Are primary source materials present at the property? Yes or No
2. Where are primary source materials located? Inside Outside Both NA

Changes made to the IFF completion guidance document should be apparent in the attached file.

If you have any questions, please let me know.

Dec

IFF Guidance Revision 1.doc

## Completion of Property Information Field Form

Project: Libby Asbestos Remedial Investigation - Contaminant Screening Study (CSS)

Project No.: 3282-116

Document No.: CDM-LIBBY-04

Approved by: \_\_\_\_\_

Project Manager

\_\_\_\_\_ Date

\_\_\_\_\_ Technical Reviewer

\_\_\_\_\_ Date

\_\_\_\_\_ EPA Approval

\_\_\_\_\_ Date

An information field form (IFF) is to be completed for each structure located on a property. Two IFFs will be used: (1) primary structure and property assessment information field form and (2) secondary structure information field form. The IFFs are completed from both interviews with the occupant/owner and visual inspection of the structures and surrounding properties and are used to facilitate the information-gathering process (interview and visual inspection) of properties during the contaminant screening study (CSS).

### Definitions:

Primary structure - Refers to the main inhabitable structure on a property or the main commercial structure on a property.

Secondary structure - Refers to structures other than the primary structure located on a property (i.e., shed, barn, detached garage with an attic, etc.). Attached garages are considered part of the primary structure.

Occupant - Refers to the person currently living in a primary residential structure or business occupying an address.

Owner - Refers to the person who owns a residential property (may or may not be the current occupant) or person who owns a commercial property.



## Completion of Property Information Field Form

### Primary Structure and Property Assessment Information Field Form

Each entry on the IFF should be completed following the guidance procedure, and any notes on each item should be written in the notes column to the right of each data item.

#### Header Information

**BD#:** Refers to the location identification (ID) number of the structure the IFF is being completed for. The field team obtains a list of available numbers from the sample coordinator.

**Field Logbook No.:** The number of the field logbook that is used to record information specific to the property being assessed on the IFF.

**Page No.:** The page numbers in the logbook that contain information specific to the property being assessed on the IFF.

**Site Visit Date:** Date of site visit, in the form MM/DD/YY.

**Address:** The address of the property being assessed on the IFF. Addresses are to be entered in the following format:

Street number - Direction - Street Name - Street Abbreviation

Where:

Street number = the number of the street address

Direction = the abbreviation of the street direction (N, S, E, or W), when applicable

Street name = correct spelling of the street name

Street abbreviation = when applicable

Road - Rd

Avenue - Ave

Street - St

Circle - Cr

Place - Pl

Boulevard - Blvd

Highway - Hwy

**Examples:** 510 N Mineral Ave  
1616 Rainy Creek Rd  
521 Pipe Creek Rd

## Completion of Property Information Field Form

**Structure Description:** Description of the structure specific the IFF (i.e., house, trailer, garage, shed, barn)

**Occupant:** Name of current occupants or business name of the primary structure. In the case of a commercial property, the occupant information would not be completed.

**Occupant Phone number:** Phone number of occupant of the primary structure.

**Owner:** Only needs to be completed if the owner of the structure or property is different than the current occupant (i.e., renter). Required for commercial properties.

**Owner Phone number:** Phone number of the owner of the property. For residential properties, only complete if the owner is different than the current occupant. Required for commercial properties.

**Sampling Team:** Full name and company of each member of the team assessing the property (i.e., members sampling and/or completing IFF).

**Field Form Check Completed by (100% of forms):** To be signed, after IFF is checked by the field team member not completing the IFF.

**Screening Field check Completed by (2% of forms):** To be signed, after IFF is checked by the CSS task leader.

### House Attributes

**Property Description:** Description of the property specific to the IFF being completed.

**Surrounding Land Use:** Description of the land use groups surrounding the property specific to the IFF being completed. Indicate all that apply.

**Year of Construction:** Year structure was constructed. If occupant and/or owner do not know what year the structure was complete, choose unknown.

**Square Footage:** Calculated from the field diagram or estimated from occupant/owner interview.

## Completion of Property Information Field Form

**Construction Material:** Material structure is constructed from. If other than wood, masonry, or stone, choose other and provide a description.

**Number of Floors Above Ground:** Number of floors above ground specific to the structure that is assessed on the IFF. If other than 1, 2, or 3, provide number of floors in blank. The number of floors above ground should include the attic only if it is used as a living space.

**Number of Rooms Per Floor Above Ground:** Number of rooms per floor that is above ground. Enter number of rooms per floor next to the floor number. If more than three floors are present, provide the information on the blank.

**Basement:** If a basement is present, choose yes. If a basement is not present, choose no. Basement refers to a room below ground level that a person can enter and stand upright (i.e., a crawl space is not a basement).

**Heating Source:** Method by which heat is produced in the structure. If a method other than wood/coal, electric, or propane/gas is used as a heating source, choose other and provide a description.

**Heat Distribution:** Method by which heat is distributed throughout the structure. Occupant and/or owner should be able to provide this information.

### Occupant Information

**Number of Adults/Employees:** For residences, provide the number of adults that live at the residence; for a commercial property, provide the number of employees that work in the structure.

**Number of Children:** For residences, provide the number of children living there or visiting a commercial property for an extended period of time per day. ~~for a commercial property, indicate the number of children as zero.~~

**Years at Location:** Number of years current occupant or business has occupied the structure.

**Was the residence/building remodeled?** Provide yes or no as an answer. If yes, provide years since remodeling and location of remodeling. If occupant/owner is unsure, provide a note in the provided space.

## Completion of Property Information Field Form

**Has resident/business purchased any Libby vermiculite materials from W.R. Grace in the past?** Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

**Has the property at this location been used for a for-profit enterprise of distributing, treating, storing, or disposing of Libby vermiculite?** Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

~~Has any present or former occupant worked at the W.R. Grace mine and/or any former processing plant?~~ Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

~~Has any present or former occupant been diagnosed with an asbestos-related disease?~~ Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

**Are there any known areas of exposed vermiculite?** Base yes or no answer on occupant/owner interview and visual inspection of home. If yes, provide location of exposed vermiculite.

### Indoor Assessment

**Vermiculite Insulation Past or Present:** Visual inspection of attic is required to answer item. If owner/occupant indicates past presence of vermiculite insulation, note in space provided and year of removal if available. Past or present presence in walls, basements, and crawl spaces can be answered from the occupant/owner interview, but this must be noted in the area provided.

**Evidence of Physical Damage?** Based on visual inspection of interior

**Evidence of Water Damage?** Based on visual inspection of interior

**Evidence of vermiculite used in building materials?** Based on occupant interview and/or visual inspection. If owner is unsure or visual inspection is not comprehensive, provide this information in the notes area.

## Completion of Property Information Field Form

### Outdoor Assessment

**Libby Amphibole Sources Present:** Based on visual inspection of the property. If vermiculite piles, tremolite rocks, or other primary sources are observed, provide yes as the answer. If primary sources appear absent but vermiculite is observed in garden soils or other disturbed areas, provide yes as the answer with notes in the area provided.

**Proximity to Other Properties with Potential Sources of Libby Amphiboles:** Based on observations of nearby properties. If near properties are known to contain potential sources of Libby amphiboles, it should be noted in this data item.

**Type and Frequency of Activity Near Vermiculite Material - Indoor:** Based on occupant/owner interview. Frequency of contact, duration of contact, and extent of contact are required. If no indoor vermiculite present, provide this information in the notes area.

**Type and Frequency of Activity Near Vermiculite Material - Outdoor:** Based on occupant/owner interview. Frequency of contact, duration of contact, and extent of contact are required. If no outdoor vermiculite present, provide this information in the notes area.

### CSS Assessment

#### Occupant Information:

- Is there any knowledge of former miners, close relative of miners, or any highly exposed persons living or visiting the property? *Based on verbal interview.*
- Is the resident, past or present, diagnosed with an asbestos related disease? *Based on verbal interview.*

#### Indoor Information:

- Does the interior have Libby vermiculite attic insulation? *Based on visual inspection.*
- Did the interior ever have Libby vermiculite attic insulation? *Based on verbal interview.*
- Are there vermiculite additives in any of the building materials? *Based on visual inspections and verbal interview.*

#### Outdoor Information:

- Is there any evidence of primary source material near the property? *Based on visual inspection.*

## Completion of Property Information Field Form

- Could this have been tracked indoors or otherwise spread outdoors on the property? *Based on visual inspections and verbal interview.*

### Overall Assessment

- Are primary source materials present at the property?: If any primary source (visible vermiculite indoors, outdoors; tremolite rocks, ZAI) are present answer question yes. If these primary sources are not present answer question no.
- Where are primary source materials located? Inside, Outside, Both, NA: NA will apply if no primary sources are present.

### **Additional Information**

Any information concerning the presence of sources that are identified in the occupant/owner interview.

### **Field Diagram of Property**

To include location of all structures, observed sources, and location of all disturbed areas.

### **Field Diagram of Primary Structure**

To be completed for homes with vermiculite insulation past or present. Complete one sheet per floor and provide scale drawing of rooms.

## **Secondary Structure Information Field Form**

All data items are discussed above. Not all items on the primary structure form are required on the secondary structure form.

Heating Source and Heating Distribution may not be applicable to a secondary structure.

**Record of Deviation/  
Request for Modification**

to the

Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 (NA)

Requester: Dee Warren  
Company: CDM

Title: CSS  
Date: 6/10/02

## Description of Deviation:

Change index ID# from CSS-#### to CS-####

Field Logbook and page number deviation is documented on: 10057 page 19

## Reason for Deviation:

Version 2 Libby Database unable to accept CSS-#### as an index ID#

## Potential Implications of this Deviation:

## Duration of Deviation (circle one):

Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

Section 5.4.4. Sample Labeling and identifications changes from CSS to CS

Technical Review: [Signature]  
(Volpe Project Manager or designate) does not apply to CSS

Date: 6/12/02

Quality Assurance Review and Approval: [Signature]  
(Quality Assurance Coordinator or designate)

Date: 6/14/02

Approved By: Jim Christensen  
(USEPA RPM, OSC, or SSC)

Title: RPM

Date: 6/11/02

**Record of Deviation/  
Request for Modification**

to the

Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.****File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren Title: CSS TASK Leader  
Company: CDM Date: 6/10/02

## Description of Deviation:

Changes to EF completion procedureField Logbook and page number deviation is documented on: 100057 page 46

## Reason for Deviation:

To collect more accurate data regarding primary sources  
of property

## Potential Implications of this Deviation:

## Duration of Deviation (circle one):

Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

See AttachedTechnical Review: [Signature]  
(Volpe Project Manager or designate) does not apply to CSSDate: 6/12/02Quality Assurance Review and Approval: [Signature]  
(Quality Assurance Coordinator or designate)Date: 6/12/02Approved By: J. J. Christensen  
(USEPA RPM, OSC, or SSC)Title: RPMDate: 6/11/02



4 46

Location Libby MT Date 6/10/02  
Project / Client Libby Asbestos Site - CSR  
Volpe Center EPA Region 8

A Soils Team #2: Chris Worthington and  
O Bob Alexander logbook # 100071

00800 Attend morning meeting

00900 Teams depart office to begin field  
work

01130 Begin completion of Modification  
forms for CSR SAP. Field Change:

11 All Field Screening and Sampling

Activities EXCEPT soil sampling will be  
performed by the Recon team. The IFE  
will be COMPLETED by the Recon Team.

The soil team will only add sample locations  
to the property sketch. Changes to SAP  
Section 4.3.3.1 - Visual Inspection

Second paragraph will be completed by  
the recon team.

Section 4.3.3.3 - Soil Sampling Sketch

Property will now be completed by the  
recon team. Soils teams will only add  
sample locations to the property sketch.

Figure 4-4 - Field Team Soil Sampling

will no longer include yard sketch.  
Change to Add sample locations  
to property sketch.

JUN-10-2002 05:41P FROM:



# Record of Deviation/ Request for Modification

to the

Libby Sampling and Quality Assurance Project Plan

Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Klamen

Title: CSS Task leader

Company: CDM

Date: 6/10/02

Description of Deviation:

Rinsate samples will not be collected during first week of June

Field Logbook and page number deviation is documented on: 100057 page 47

Reason for Deviation:

No lab to analyze samples

Potential Implications of this Deviation:

Delay on determining relationship between equipment blanks and aqueous  
muscle samples

Duration of Deviation (circle one):

Temporary

Date(s): 6/10/02 - until laboratory contract determined

Resident address(es): NA

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

Technical Review:

(Volpe Project Manager or designate) does not apply to CSS

Date: 6/13/02

Quality Assurance Review and Approval:

(Quality Assurance Coordinator or designate)

Date: 6/12/02

Approved By:

(USEPA RPM, OSC, or SSC)

RPM

Date: 6/11/02



# Record of Deviation/ Request for Modification

to the  
Libby Sampling and Quality Assurance Project Plan

**Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.**

Project QAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren Title: CSS Task Leader  
Company: CDM Date: 6/10/02

Description of Deviation:  
Change to Soil Field Sample Data Sheet

Field Logbook and page number deviation is documented on: 100057 page 47

Reason for Deviation:  
To track Field Equipment Blanks

Potential Implications of this Deviation:  
Tracking of information in Libby V2 database

Duration of Deviation (circle one):

Temporary Date(s): \_\_\_\_\_  
Resident address(es): \_\_\_\_\_

Permanent (complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

See Attached

Technical Review: [Signature]  
(Volpe Project Manager or designate) does not apply to CSS

Date: 6/13/02

Quality Assurance Review and Approval: [Signature]  
(Quality Assurance Coordinator or designate)

Date: 6/12/02

Approved By: J. T. Christian  
(USEPA RFM, CSC, or SSC)

Title: RPM  
6/11/02

Date: \_\_\_\_\_

Libby, MT

6/10/02

47

Libby Asbestos Site - OS

Volpe Center

EPA Region 8

Rinsate Samples Section 7.1 - rinsate

samples will not be collected during first week of June due to lack of laboratory to conduct analysis. Rinsate sample collection will be completed during first week when laboratory is available.

Field Sample Data Sheet - Category changed to include option for Field Blank (lot or equipment) to allow for better tracking of field equipment/lot blank samples.

Changes to Completion of Field Sample Data Sheet Completion Guidance Document: after location description add to category Field Blank (lot or equipment). Circle lot when lot blank collected from silica sand source, circle equipment when equipment blank collected at end of day.



# Record of Deviation/ Request for Modification

to the  
Libby Sampling and Quality Assurance Project Plan

Instructions to Requester: Fax to contacts at bottom of form for review and approval.  
File approved copy with Data Manager and fax copy to SRC.

Project QAAPP (circle one): PE Study Part a (approved 6/00), b (approval pending), c (approval pending)  
Phase I (approved 4/00) Phase II (approved 2/01)  
Removal Action (approved 7/00) CSS (approval 5/02)

Scenario No. (circle one): 1 2 3 4 NA

Requester: Dee Warren

Title: CSS Task Leader

Company: CDM

Date: 6/10/02

Description of Deviation:

Wet area from where soil samples are collected

Field Logbook and page number deviation is documented on: 100057 pg 47

Reason for Deviation:

To reduce dust generated during soil sample collection.

Potential Implications of this Deviation:

Soils may be received wet at processing lab

Duration of Deviation (circle one):

Temporary

Date(s):

Resident address(es):

Permanent

(complete Proposed Modification Section)

Proposed Modification to SQAPP (attach additional sheets if necessary; state section and page numbers of SQAPP when applicable):

See attached.

Technical Review:

(Volpe Project Manager or designate) does not apply to CSS

Date:

6/13/02

Quality Assurance Review and Approval:

(Quality Assurance Coordinator or designate)

Date:

6/12/02

Approved By:

(USEPA RRM, OSC, or SSC)

Title:

RRM

Date:

6/11/02

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Libby MT 4/10/02 47  
 Libby Asbestos Site-CR  
 Volpe Center EPA Region 8

d

Rinsete Sampler Section 7.1 - rinsete samples will not be collected during first week of June due to lack of laboratory to conduct analysis. Rinsete sample collection will be completed during first week when laboratory is available. (2)

be

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AP

Field Sample Data Sheet - Category changed to include option for Field Blank (lot or equipment) to allow for better tracking of field equipment/lot blank samples.

Changes to Completion of Field Sample Data Sheet Completion Guidance Document: after location description add to category Field Blank (lot or equipment). Circle lot when lot blank collected from silica sand source, circle equipment when equipment blank collected at end of day.

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ling

-td

Soil Sample Collection - Section 5.4.1 In an attempt to minimize dust generated during sample collection the area to be sampled should be wetted. (2)



## Memorandum

To: Document Control File

From: Jeff Montera 

Date: May 22, 2002

Subject: Field Changes to the Libby SAP entitled, Final Sampling and Analysis Plan, Remedial Investigation, Contaminant Screening Study, April 2002.

Field Changes:

### Text Changes

The Reconnaissance team will perform all field screening and sampling activities except soil sampling. The reconnaissance team will complete the majority of the information field form (IFF). The soils team will only add sample locations to the property sketch.

- Section 4.3.3.1 Visual Inspection second paragraph. The reconnaissance team will now do the visual inspection
- Section 4.3.3.3 Soil Sampling Sketch Property will now be completed by the reconnaissance team. Soils teams will only add sample locations to the property sketch.

### Figure Changes

- Figure 4-4 Field Team Soil sampling will no longer include Sketch Yard. It should be changed to add sample locations to property sketch.
- The updated Figure 4-4 is attached.

### Information Field Form Changes

- Two questions were removed from the occupant information section and now only appear in the CSS assessment section. This change was made because the questions appeared on the IFF twice. These two questions are:

3282-116-PP-SAMP-14632

Libby Asbestos RI SAP

5/22/2002

Field Changes to Final SAP

Document code

May 22, 2002

Page 2

1. Is there any knowledge of formed miners, close relative of miners, or any highly exposed persons living or visiting the property?

2. Is the resident diagnosed with an asbestos related disease?

- The question: Is the resident diagnosed with an asbestos related disease? was changed to Is the resident, past or present, diagnosed with an asbestos related disease?
- Two questions were added to the CSS assessment and titled "Overall Assessment". These questions were added to have a way to track if primary sources were observed anywhere on the property and the general location in which they were observed.

1. Are primary source materials present at the property? Yes or No

2. Where are primary source materials located? Inside Outside Both NA

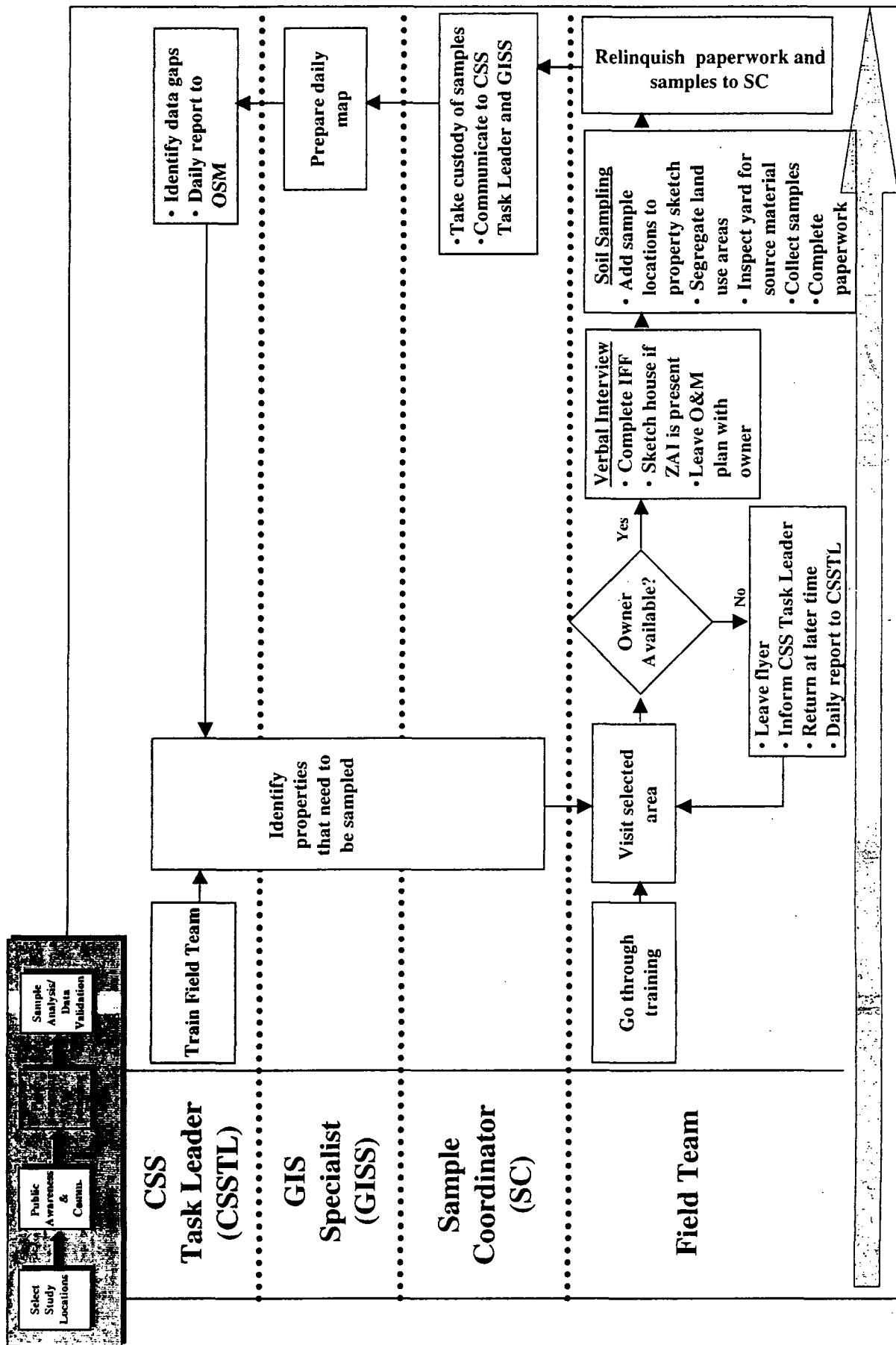
- The updated Information Field Forms are attached

#### Changes to the Completion of Property Information Field Form

- The updated Completion of Property Information Field Form is attached. Changes are presented as either underline or strikeout text.



**Figure 4-4: Responsibilities by Team Member for Field Screening and Sampling**



BD# \_\_\_\_\_

**LIBBY ASBESTOS PROJECT**  
**Contaminant Screening Study**  
**Primary Structure and Property Assessment Information Field Form**

Field Logbook No.: \_\_\_\_\_ Page No.: \_\_\_\_\_ Site Visit Date: \_\_\_\_\_

Address: \_\_\_\_\_ Structure Description: \_\_\_\_\_

Occupant: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Owner (if different than occupant): \_\_\_\_\_ Phone Number: \_\_\_\_\_

Sampling Team: \_\_\_\_\_

Field Form Check Completed by (100% of forms): \_\_\_\_\_

Screening Field Check Completed by (2% of forms): \_\_\_\_\_

Data Item	Value	Notes
<b>HOUSE ATTRIBUTES</b>		
Property Description	Residential Industrial Commercial	
Surrounding Land Use	Residential Industrial Commercial School Mining Other: _____	
Year of Construction	_____ Unknown	
Square Footage		
Construction Material	Wood frame Masonry/Stone Other: _____	
Number of Floors Above Ground	1 2 3 Other: _____	
Number of Rooms Per Floor Above Ground	1: _____ 2: _____ 3: _____ Other: _____	
Basement	Yes No	
Heating Source	Wood/Coal Electric Propane/Gas Other: _____	
Heat Distribution	Forced air Radiant Other: _____	

CSS INFORMATION FIELD FOI (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>OCCUPANT INFORMATION</b>		
Number of Adults/Employees	<div>1      2      3      4</div> <div>5-15   16-20   21-30   &gt;30</div>	
Number of Children	<div>0      1      2      3      4</div> <div>Other: _____</div>	
Years at Location	<1   1-5   5-10   10-15   >15	
Was the residence/building remodeled?	Yes                      No	
	If yes, When (years):    <2   2-5   >5 Where:   Attic      Living Areas Garage   Basement Other: _____	
Has resident/business purchased any Libby vermiculite materials from W.R. Grace in the past?	Yes                      No	
Has the property at this location been used for a for-profit enterprise of distributing, treating, storing, or disposing of Libby vermiculite?	Yes                      No	
Are there any known areas of exposed vermiculite?	Yes                      No	
	If yes, Where:   Ceiling   Walls Floors    Attic Other: _____	

**CSS INFORMATION FIELD FORM (continued)**

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>INDOOR ASSESSMENT</b>		
Vermiculite Insulation Past or Present	Attic:      Yes   No   NA Walls:      Yes   No   NA Basement:   Yes   No   NA Crawl Space: Yes   No   NA Other: _____	Visual confirmation of current presence or absence required for attic.
Evidence of Physical Damage?	Yes                  No	
Evidence of Water Damage?	Yes                  No	
Evidence of vermiculite used in building materials?	Yes                  No	
<b>OUTDOOR ASSESSMENT</b>		
Libby Amphibole Sources Present	Garden:      Yes   No   NA Yard:          Yes   No   NA Stockpiles:   Yes   No   NA Other: _____	
Proximity to Other Properties with Potential Sources of Libby Amphiboles	Next door Within same block Other: _____	

CSS INFORMATION FIELD FOR (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>EXPOSURE ASSESSMENT</b>		
Type and Frequency of Activity Near Vermiculite Material - Indoor	Frequency: Once a day Once a week Once a month Once a year	
	Duration of Contact: <1 hour 1-2 hours 2-4 hours >4 hours	
	Extent of Contact: Heavy Moderate Light	
Type and Frequency of Activity Near Vermiculite Material - Outdoor	Frequency: Once a day Once a week Once a month Once a year	
	Duration of Contact: <1 hour 1-2 hours 2-4 hours >4 hours	
	Extent of Contact: Heavy Moderate Light	

CSS INFORMATION FIELD FOR (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes
<b>CONTAMINANT SCREENING STUDY ASSESSMENT</b>		
<b>Occupant Information</b>		
Is there any knowledge of former miners, close relative of miners, or any highly exposed persons living or visiting the property?	Yes                      No Unknown	
Is the resident, past or present, diagnosed with an asbestos related disease?	Yes                      No Unknown	
<b>Indoor Information</b>		
Does the interior have Zonolite attic insulation?	Yes                      No Unknown	
Did the interior ever have Zonolite attic insulation?	Yes                      No Unknown	
Are there vermiculite additives in any of the building materials?	Yes                      No Unknown	
<b>Outdoor Information</b>		
Is there any evidence of primary source materials near the property?	Yes                      No Unknown	
Could this have been tracked indoors or otherwise spread outdoors on the property?	Yes                      No Unknown	
<b>Overall Assessment</b>		
Are primary source materials present at the property?	Yes                      No	
Where are primary source materials located?	Inside                      Outside Both                      NA	
<b>ADDITIONAL INFORMATION</b> _____		
_____		
_____		
_____		
_____		

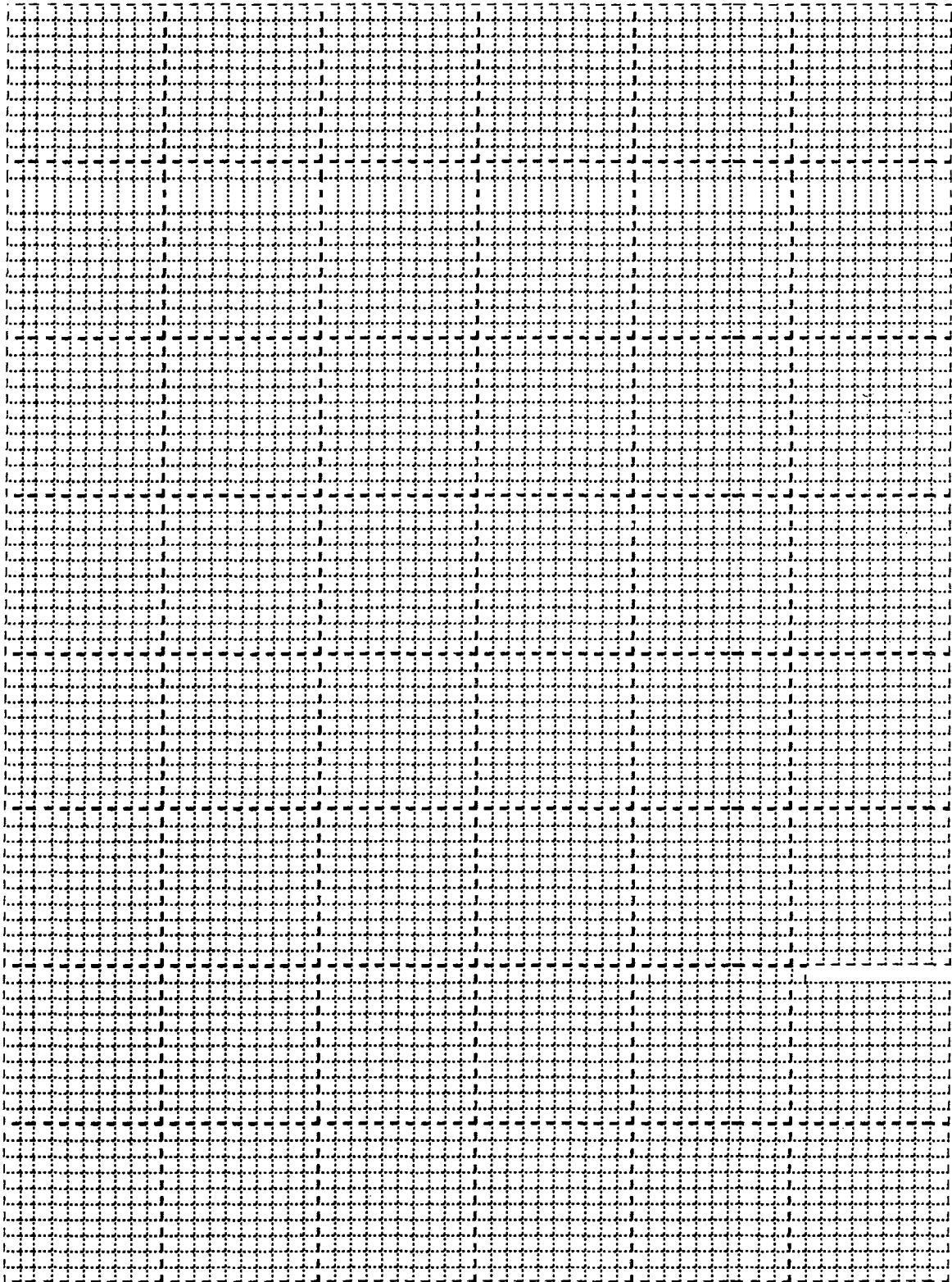
Address: \_\_\_\_\_

BD# \_\_\_\_\_

**FIELD DIAGRAM OF PROPERTY**

Identify important features (i.e. drainage, trees, gardens, suspected Libby amphibole source areas, sample locations, etc).

NOT TO SCALE



Address: \_\_\_\_\_

BD# \_\_\_\_\_

FIELD DIAGRAM OF PRIMARY STRUCTURE

Floor of House (circle):    First        Second        Third        Basement

Include approximate dimensions of rooms and floor covering type. Use more than one diagram if needed.

Scale: 1/10" = 1 foot



**LIBBY ASBESTOS PROJECT**  
**Contaminant Screening Study**  
**Secondary Structure Information Field Form**

Field Logbook No.: \_\_\_\_\_ Page No.: \_\_\_\_\_ Site Visit Date: \_\_\_\_\_  
 Address: \_\_\_\_\_ Structure Description: \_\_\_\_\_  
 Occupant: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Owner (if different than occupant): \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Sampling Team: \_\_\_\_\_  
 Field Form Check Completed by (100% of forms): \_\_\_\_\_  
 Screening Field Check Completed by (2% of forms): \_\_\_\_\_

Data Item	Value	Notes
<b>STRUCTURE ATTRIBUTES</b>		
Property Description	Residential Industrial Commercial	
Surrounding Land Use	Residential Industrial Commercial School Mining Other: _____	
Year of Construction	_____ Unknown	
Square Footage		
Construction Material	Wood frame Masonry/Stone Other: _____	
Number of Floors Above Ground	1 2 3 Other: _____	
Number of Rooms Per Floor Above Ground	1: _____ 2: _____ 3: _____ Other: _____	
Basement	Yes No	
Heating Source	Wood/Coal Electric Propane/Gas NA Other: _____	
Heat Distribution	Forced air Radiant NA Other: _____	
Was the building remodeled?	Yes No	

CSS INFORMATION FIELD FOR.. (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value	Notes	
Are there any known areas of exposed vermiculite?	Yes                      No		
	If yes,  Where: Ceiling    Walls Floors    Attic Other: _____		
<b>INDOOR ASSESSMENT</b>			
Vermiculite Insulation Past or Present	Attic:            Yes   No   NA Walls:            Yes   No   NA Basement:       Yes   No   NA Crawl Space:    Yes   No   NA Other: _____	Visual confirmation of current presence or absence required for attic.	
Evidence of Physical Damage?	Yes                      No		
Evidence of Water Damage?	Yes                      No		
Evidence of vermiculite used in building materials?	Yes                      No		
<b>EXPOSURE ASSESSMENT</b>			
Type and Frequency of Activity Near Vermiculite Material	Frequency:            Once a day Once a week Once a month Once a year		
	Duration of Contact:    <1 hour 1-2 hours 2-4 hours >4 hours		
	Extent of Contact:       Heavy Moderate Light		

CSS INFORMATION FIELD FORM (continued)

Address: \_\_\_\_\_

BD# \_\_\_\_\_

Data Item	Value		Notes
<b>CONTAMINANT SCREENING SURVEY ASSESSMENT</b>			
<b>Occupant Information</b>			
Is there any knowledge of former miners, close relative of miners, or any highly exposed persons living or visiting the property?	Yes	No	
	Unknown	NA	
Is the resident, past or present, diagnosed with an asbestos related disease?	Yes	No	
	Unknown	NA	
<b>Indoor Information</b>			
Does the interior have Zonolite attic insulation?	Yes	No	
	Unknown	NA	
Did the interior ever have Zonolite attic insulation?	Yes	No	
	Unknown	NA	
Are there vermiculite additives in any of the building materials?	Yes	No	
	Unknown	NA	
<b>ADDITIONAL INFORMATION</b>			
_____			
_____			
_____			
_____			
_____			
_____			
_____			

Address: \_\_\_\_\_

BD# \_\_\_\_\_

FIELD DIAGRAM OF SECONDARY STRUCTURE

Floor of House (circle):    First            Second            Third            Basement

Include approximate dimensions of rooms and floor covering type. Use more than one diagram if needed.

Scale: 1/10" = 1 foot

**CSS INFORMATION FIELD FORM (continued)**

Address: \_\_\_\_\_

BD# \_\_\_\_\_

# Completion of Property Information Field Form

Project: Libby Asbestos Remedial Investigation - Contaminant Screening Study (CSS)

Project No.: 3282-116

Document No.: CDM-LIBBY-04

Approved by: \_\_\_\_\_  
Project Manager Date

\_\_\_\_\_  
Technical Reviewer Date

\_\_\_\_\_  
EPA Approval Date

An information field form (IFF) is to be completed for each structure located on a property. Two IFFs will be used: (1) primary structure and property assessment information field form and (2) secondary structure information field form. The IFFs are completed from both interviews with the occupant/owner and visual inspection of the structures and surrounding properties and are used to facilitate the information-gathering process (interview and visual inspection) of properties during the contaminant screening study (CSS).

## Definitions:

Primary structure – Refers to the main inhabitable structure on a property or the main commercial structure on a property.

Secondary structure – Refers to structures other than the primary structure located on a property (i.e., shed, barn, detached garage with an attic, etc.). Attached garages are considered part of the primary structure.

Occupant – Refers to the person currently living in a primary residential structure or business occupying an address.

Owner – Refers to the person who owns a residential property (may or may not be the current occupant) or person who owns a commercial property.

# Completion of Property Information Field Form

## Primary Structure and Property Assessment Information Field Form

Each entry on the IFF should be completed following the guidance procedure, and any notes on each item should be written in the notes column to the right of each data item.

### Header Information

**BD#:** Refers to the location identification (ID) number of the structure the IFF is being completed for. The field team obtains a list of available numbers from the sample coordinator.

**Field Logbook No.:** The number of the field logbook that is used to record information specific to the property being assessed on the IFF.

**Page No.:** The page numbers in the logbook that contain information specific to the property being assessed on the IFF.

**Site Visit Date:** Date of site visit, in the form MM/DD/YY.

**Address:** The address of the property being assessed on the IFF. Addresses are to be entered in the following format:

Street number – Direction – Street Name – Street Abbreviation

Where:

Street number = the number of the street address

Direction = the abbreviation of the street direction (N, S, E, or W), when applicable

Street name = correct spelling of the street name

Street abbreviation = when applicable

Road – Rd

Avenue – Ave

Street – St

Circle – Cr

Place – Pl

Boulevard – Blvd

Highway – Hwy

Examples: 510 N Mineral Ave  
1616 Rainy Creek Rd  
521 Pipe Creek Rd

# Completion of Property Information Field Form

**Structure Description:** Description of the structure specific the IFF (i.e., house, trailer, garage, shed, barn)

**Occupant:** Name of current occupants or business name of the primary structure. ~~In the case of a commercial property, the occupant information would not be completed.~~

**Occupant Phone number:** Phone number of occupant of the primary structure.

**Owner:** Only needs to be completed if the owner of the structure or property is different than the current occupant (i.e., renter). Required for commercial properties.

**Owner Phone number:** Phone number of the owner of the property. For residential properties, only complete if the owner is different than the current occupant. Required for commercial properties.

**Sampling Team:** Full name and company of each member of the team assessing the property (i.e., members sampling and/or completing IFF).

**Field Form Check Completed by (100% of forms):** To be signed, after IFF is checked by the field team member not completing the IFF.

**Screening Field check Completed by (2% of forms):** To be signed, after IFF is checked by the CSS task leader.

## House Attributes

**Property Description:** Description of the property specific to the IFF being completed.

**Surrounding Land Use:** Description of the land use groups surrounding the property specific to the IFF being completed. Indicate all that apply.

**Year of Construction:** Year structure was constructed. If occupant and/or owner do not know what year the structure was complete, choose unknown.

**Square Footage:** Calculated from the field diagram or estimated from occupant/owner interview.



## Completion of Property Information Field Form

**Construction Material:** Material structure is constructed from. If other than wood, masonry, or stone, choose other and provide a description.

**Number of Floors Above Ground:** Number of floors above ground specific to the structure that is assessed on the IFF. If other than 1, 2, or 3, provide number of floors in blank. The number of floors above ground should include the attic only if it is used as a living space.

**Number of Rooms Per Floor Above Ground:** Number of rooms per floor that is above ground. Enter number of rooms per floor next to the floor number. If more than three floors are present, provide the information on the blank.

**Basement:** If a basement is present, choose yes. If a basement is not present, choose no. Basement refers to a room below ground level that a person can enter and stand upright (i.e., a crawl space is not a basement).

**Heating Source:** Method by which heat is produced in the structure. If a method other than wood/coal, electric, or propane/gas is used as a heating source, choose other and provide a description.

**Heat Distribution:** Method by which heat is distributed throughout the structure. Occupant and/or owner should be able to provide this information.

### Occupant Information

**Number of Adults/Employees:** For residences, provide the number of adults that live at the residence; for a commercial property, provide the number of employees that work in the structure.

**Number of Children:** For residences, provide the number of children living there or visiting a commercial property for an extended period of time per day. ; ~~for a commercial property, indicate the number of children as zero.~~

**Years at Location:** Number of years current occupant or business has occupied the structure.

**Was the residence/building remodeled?** Provide yes or no as an answer. If yes, provide years since remodeling and location of remodeling. If occupant/owner is unsure, provide a note in the provided space.

## **Completion of Property Information Field Form**

**Has resident/business purchased any Libby vermiculite materials from W.R. Grace in the past?** Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

**Has the property at this location been used for a for-profit enterprise of distributing, treating, storing, or disposing of Libby vermiculite?** Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

~~**Has any present or former occupant worked at the W.R. Grace mine and/or any former processing plant?**~~ Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

~~**Has any present or former occupant been diagnosed with an asbestos-related disease?**~~ Based on occupant/owner interview. Provide yes or no as an answer. If occupant/owner is unsure, provide a note in the provided space.

**Are there any known areas of exposed vermiculite?:** Base yes or no answer on occupant/owner interview and visual inspection of home. If yes, provide location of exposed vermiculite.

### **Indoor Assessment**

**Vermiculite Insulation Past or Present:** Visual inspection of attic is required to answer item. If owner/occupant indicates past presence of vermiculite insulation, note in space provided and year of removal if available. Past or present presence in walls, basements, and crawl spaces can be answered from the occupant/owner interview, but this must be noted in the area provided.

**Evidence of Physical Damage?** Based on visual inspection of interior

**Evidence of Water Damage?** Based on visual inspection of interior

**Evidence of vermiculite used in building materials?** Based on occupant interview and/or visual inspection. If owner is unsure or visual inspection is not comprehensive, provide this information in the notes area.

# Completion of Property Information Field Form

## Outdoor Assessment

**Libby Amphibole Sources Present:** Based on visual inspection of the property. If vermiculite piles, tremolite rocks, or other primary sources are observed, provide yes as the answer. If primary sources appear absent but vermiculite is observed in garden soils or other disturbed areas, provide yes as the answer with notes in the area provided.

**Proximity to Other Properties with Potential Sources of Libby Amphiboles:** Based on observations of nearby properties. If near properties are known to contain potential sources of Libby amphiboles, it should be noted in this data item.

**Type and Frequency of Activity Near Vermiculite Material – Indoor:** Based on occupant/owner interview. Frequency of contact, duration of contact, and extent of contact are required. If no indoor vermiculite present, provide this information in the notes area.

**Type and Frequency of Activity Near Vermiculite Material – Outdoor:** Based on occupant/owner interview. Frequency of contact, duration of contact, and extent of contact are required. If no outdoor vermiculite present, provide this information in the notes area.

## CSS Assessment

### Occupant Information:

- Is there any knowledge of former miners, close relative of miners, or any highly exposed persons living or visiting the property? *Based on verbal interview.*
- Is the resident, past or present, -diagnosed with an asbestos related disease? *Based on verbal interview.*

### Indoor Information:

- Does the interior have Libby vermiculite attic insulation? *Based on visual inspection.*
- Did the interior ever have Libby vermiculite attic insulation? *Based on verbal interview.*
- Are there vermiculite additives in any of the building materials? *Based on visual inspections and verbal interview.*

### Outdoor Information:

- Is there any evidence of primary source material near the property? *Based on visual inspection.*

## Completion of Property Information Field Form

- Could this have been tracked indoors or otherwise spread outdoors on the property? *Based on visual inspections and verbal interview.*

### Overall Assessment

- Are primary source materials present at the property?: If any primary source (visible vermiculite indoors, outdoors; tremolite rocks, ZAI) are present answer question yes. If these primary sources are not present answer question no.
- Where are primary source materials located? Inside, Outside, Both, NA: NA will apply if no primary sources are present.

### **Additional Information**

Any information concerning the presence of sources that are identified in the occupant/owner interview.

### **Field Diagram of Property**

To include location of all structures, observed sources, and location of all disturbed areas.

### **Field Diagram of Primary Structure**

To be completed for homes with vermiculite insulation past or present. Complete one sheet per floor and provide scale drawing of rooms.

## **Secondary Structure Information Field Form**

All data items are discussed above. Not all items on the primary structure form are required on the secondary structure form.

Heating Source and Heating Distribution may not be applicable to a secondary structure.



1331 17th Street, Suite 1050  
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tel: 303 295-1237  
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May 17, 2002

Mr. Jim Christiansen  
Remedial Project Manager  
U.S. Environmental Protection Agency  
Region VIII, Mail Code (EPR-SR)  
999 18th Street, Suite 500  
Denver, CO 80202-2466

Project: RAC Contract No. 68-W5-0022  
Work Assignment No. 116-RIRI-08BC  
DCN: 3282-116-PP-SAMP-14598  
Subject: Change-out-pages for the Final Sampling and Analysis Plan, Remedial  
Investigation, Contaminant Screening Study, Libby Asbestos Site Operable  
Unit 4, Libby, Montana

Dear Mr. Christiansen:

As requested, CDM has enclosed a revised report cover page and three site-specific standard operating procedures (SOPs) to be included in Appendix A of the above-referenced document. The revised cover sheet and SOPs were inserted into the 10 documents that were sent to you on May 9, 2002. The remaining 40 copies of these change-out pages will be distributed by mail to the distribution list included in the Final Sampling and Analysis Plan (CDM 2002).

If you have any questions or require additional information, please call me at 720-264-1116.

Very truly yours,

*For* Jeff Montera  
Program Manager  
CDM Federal Programs Corporation

#### Attachments

cc: J. Powell, EPA Project Officer  
L. Brown, CDM Program Manager  
Document Control

3282-116-PP-SAMP-14598

Libby Asbestos RI SAP

5/17/2002

Change-out-pages for Final S&A Plan, Rem

280-RAC8116/SAP/Final/Final SAP Change Pages.doc

## Libby Asbestos Site, Operable Unit 4 Libby, Montana

Final Sampling and Analysis Plan  
Remedial Investigation  
Contaminant Screening Study

April 2002



*Sampling and Analysis Plan*

## TECHNICAL MEMO 1

### CONCORDANCE BETWEEN VISIBLE VERMICULITE AND THE OCCURRENCE OF ASBESTOS BY PLM IN SOIL AND SOIL-LIKE MEDIA

#### 1.0 INTRODUCTION

USEPA Region 8 is currently planning a large-scale investigation to identify potentially significant sources of asbestos in and about the community of Libby. Because of the cost and time required to perform a microscopic analysis of each potential source material, EPA wished to evaluate the reliability of the assumption that when visible vermiculite was present in a sample of soil-like media that asbestos would be observable by polarized light microscopy (PLM) in that sample. This technical memo summarizes the data bearing on that question.

#### 2.0 APPROACH

A query of the Libby database was performed on 05/03/02. All samples of soil or soil-like media (this does not include insulation) were reviewed to determine if the word "vermiculite" occurred in the comment field. A query was designed to isolate those samples in which the comment indicated that vermiculite was visible by eye, and all such samples were then classified into four bins according to the results of an analysis for asbestos by PLM:

- No PLM results available
- Non-detected
- Trace (asbestos visible by PLM, but level is too low to provide a quantitative estimate)
- Quantifiable ( $\geq 1\%$  asbestos by mass)

The design of the query and the resulting output are provided as Attachment 1.

#### 3.0 RESULTS

A total of 568 soil or soil-like samples were located in which the comment field indicated that visible vermiculite was present. Of these, PLM results were available for 567. These PLM results are summarized below:

**Table 1. Summary of PLM Results for Soil and Soil-Like Media with Visible Vermiculite Present**

PLM Result	Screening/Export		Schools		Residential/Commercial		Landfill	
	Number of Samples	Percent of Total	Number of Samples	Percent of Total	Number of Samples	Percent of Total	Number of Samples	Percent of Total
Non-detect	2	3%	5	19%	135	30%	3	21%
Trace(<1%)	18	25%	9	35%	265	58%	11	79%
Quantifiable (≥ 1%)	52	72%	11	42%	56	12%	0	0%



# Libby, Montana

## Locations of Soils With Visible Vermiculite

Figure 1D

Asbestos Levels  
In Soil (by PLM)

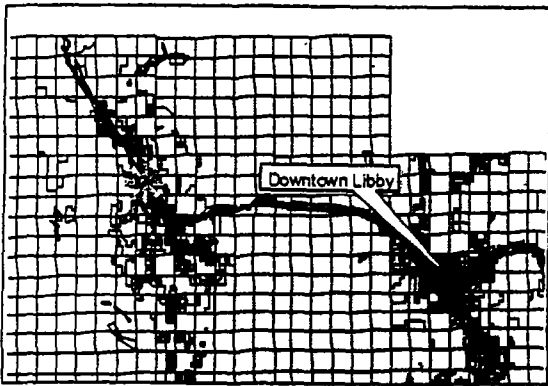
### Soil Sample Results

- ND
- TRACE
- $\geq 1\%$



Approximate Parcel  
Boundaries

### LOCUS MAP



May, 2002

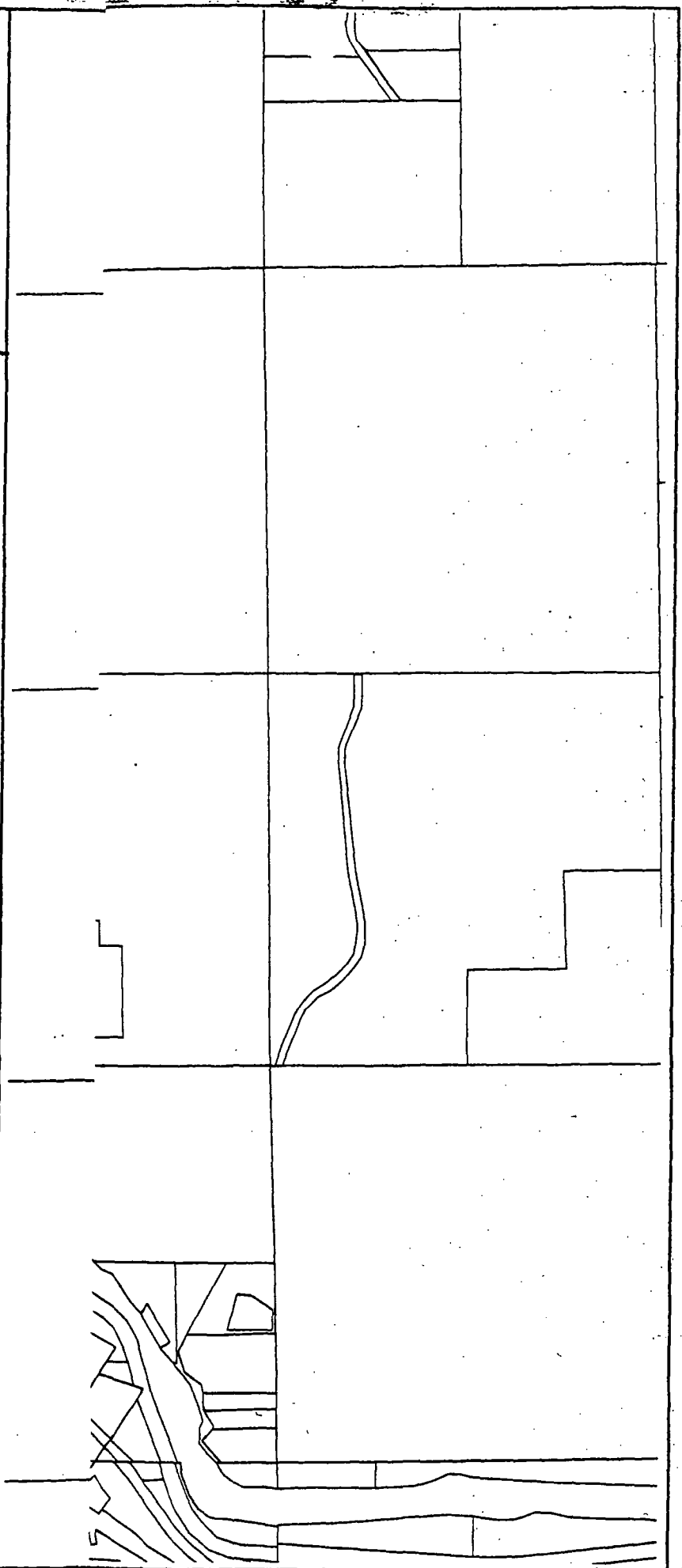
Map Projection UTM Zone 11 NAD83 FT



# CDM



2000 0 2000 Feet



# Libby, Montana

## Locations of Soils With Visible Vermiculite

Figure 1C

Asbestos Levels  
In Soil (by PLM)

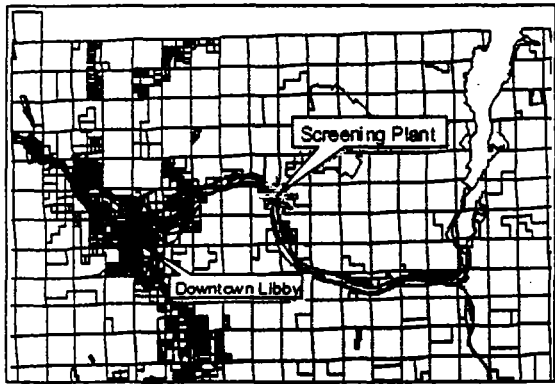
### Soil Sample Results

- ND
- TRACE
- $\geq 1\%$



Approximate Parcel  
Boundaries

### LOCUS MAP



May, 2002

Map Projection UTM Zone 11 NAD83 FT



# CDM



2000 0 2000 Feet



# Libby, Montana

## Locations of Soils With Visible Vermiculite

Figure 1B

Asbestos Levels  
In Soil (by PLM)

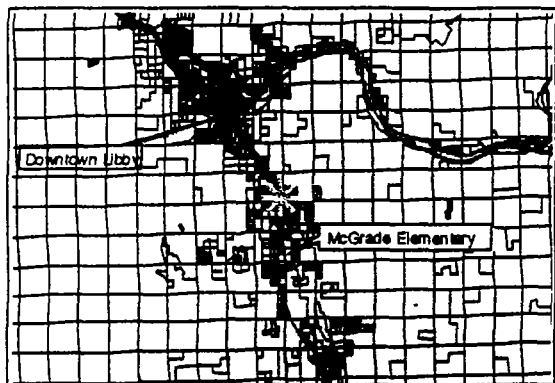
### Soil Sample Results

- ND
- TRACE
- $\geq 1\%$



Approximate Parcel  
Boundaries

### LOCUS MAP



May, 2002

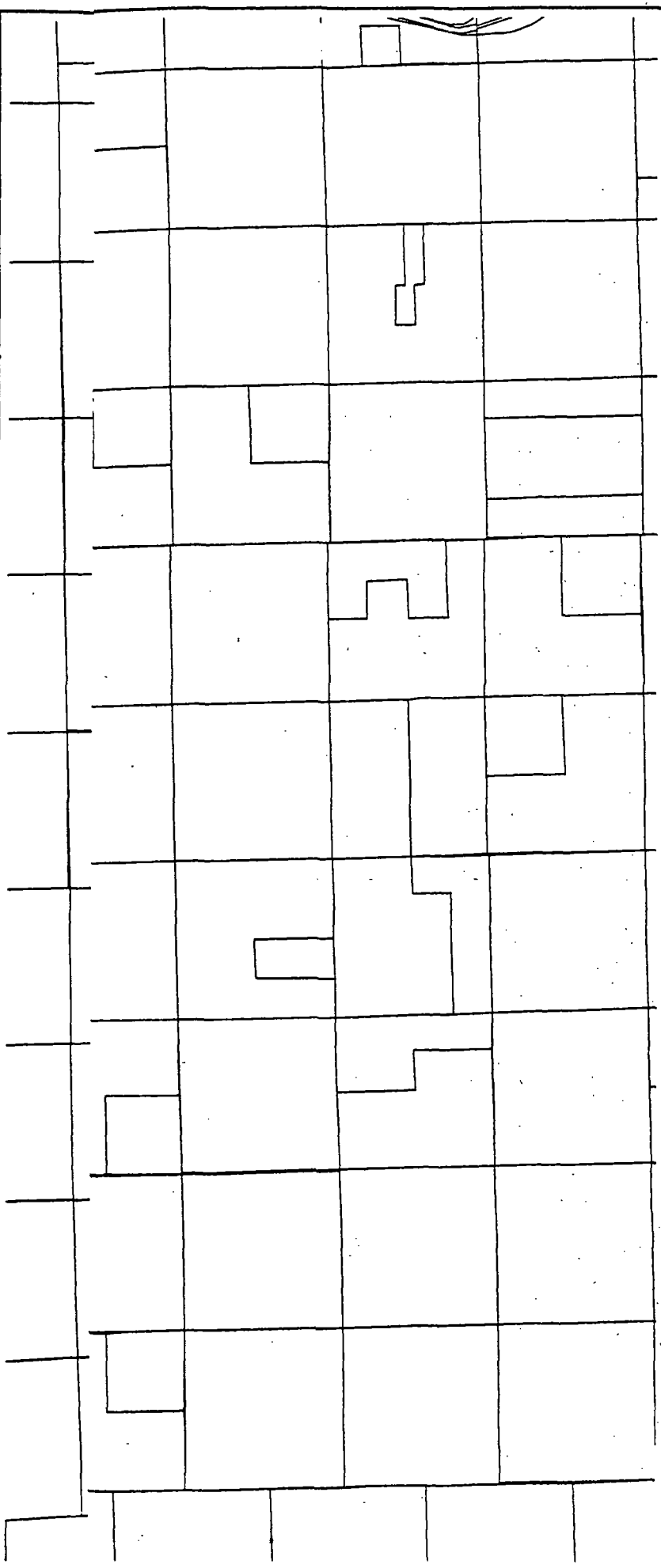
Map Projection UTM Zone 11 NAD83 FT



# CDM



5000 0 5000 Feet



# Libby, Montana

## Locations of Soils With Visible Vermiculite

Figure 1A

Asbestos Levels  
In Soil (by PLM)

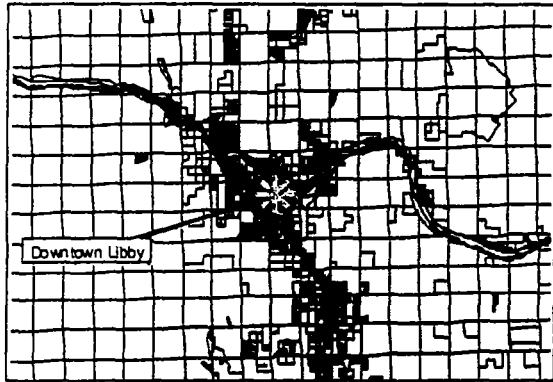
### Soil Sample Results

- ND
- TRACE
- $\geq 1\%$



Approximate Parcel  
Boundaries

LOCUS MAP



May, 2002

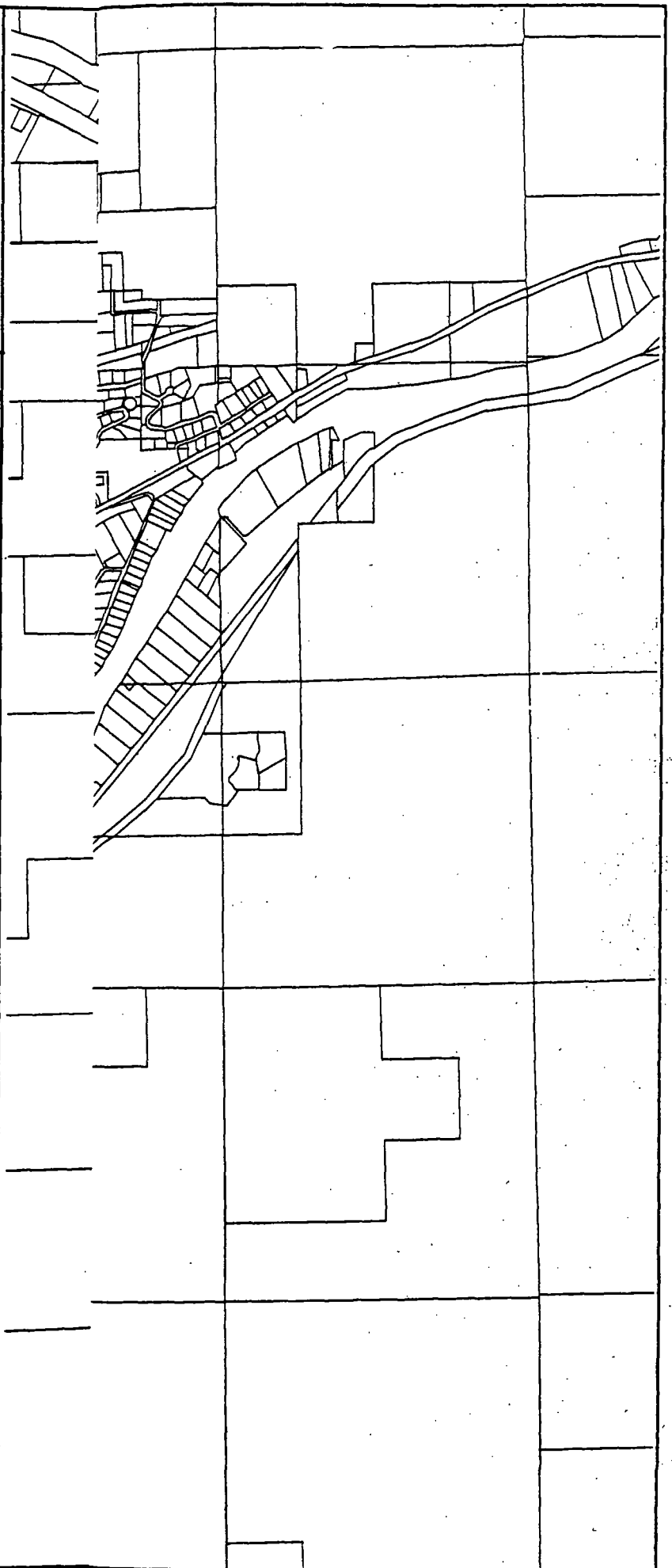
Map Projection UTM Zone 11 NAD83 FT



# CDM



2500 0 2500 Feet



ATTACHMENT 1

DATA

PLM Results for Samples with Visible Vermiculite

Index	Analysis Method	Chemical Analysis	Units	Suits Detection	Location	Property Group Desc	Location and Use Desc
1-00127	PLM-9002	TREM-ACTN	11%	TRUE	Government Lot 4		Residential
1-00157	PLM-9002	TREM-ACTN	11%	TRUE	Screening Plant		Commercial
1-00158	PLM-9002	TREM-ACTN	11%	TRUE	Screening Plant		Commercial
1-00159	PLM-9002	TREM-ACTN	21%	TRUE	Screening Plant		Commercial
1-00163	PLM-9002	TREM-ACTN	21%	TRUE	Export Facility		Commercial
1-00164	PLM-9002	TREM-ACTN	21%	TRUE	Screening Plant		Commercial
1-00165	PLM-9002	TREM-ACTN	31%	TRUE	Screening Plant		Commercial
1-00166	PLM-9002	TREM-ACTN	<	TRUE	Screening Plant		Commercial
1-00167	PLM-9002	TREM-ACTN	<	TRUE	Screening Plant		Commercial
1-00177	PLM-9002	TREM-ACTN	21%	TRUE	Government Lot 4		Residential
1-00181	PLM-9002	TREM-ACTN	21%	TRUE	Government Lot 4		Residential
1-00202	PLM-9002	TREM-ACTN	51%	TRUE	Kootenai Bluffs Subdivision		Residential
1-00204	PLM-9002	TREM-ACTN	51%	TRUE	Kootenai Bluffs Subdivision		Residential
1-00205	PLM-9002	TREM-ACTN	71%	TRUE	Kootenai Bluffs Subdivision		Residential
1-00206	PLM-9002	TREM-ACTN	71%	TRUE	Kootenai Bluffs Subdivision		Residential
1-00223	PLM-9002	TREM-ACTN	71%	TRUE	Kootenai Bluffs Subdivision		Residential
1-00224	PLM-9002	TREM-ACTN	101%	TRUE	Kootenai Bluffs Subdivision		Residential
1-00228	PLM-9002	TREM-ACTN	41%	TRUE	Kootenai Bluffs Subdivision		Residential
1-00362	PLM-9002	TREM-ACTN	<	TRUE	Export Facility		Commercial
1-00363	PLM-9002	TREM-ACTN	<	TRUE	Export Facility		Commercial
1-00364	PLM-9002	TREM-ACTN	51%	TRUE	Export Facility		Commercial
1-00365	PLM-9002	TREM-ACTN	101%	TRUE	Export Facility		Commercial
1-00368	PLM-9002	TREM-ACTN	51%	TRUE	Export Facility		Commercial
1-00369	PLM-9002	TREM-ACTN	21%	TRUE	Export Facility		Commercial
1-00381	PLM-9002	TREM-ACTN	<	TRUE	Export Facility		Commercial
1-00387	PLM-9002	TREM-ACTN	11%	TRUE	Export Facility		Commercial
1-00418	PLM-9002	TREM-ACTN	21%	TRUE	Export Facility		Commercial
1-00582	PLM-9002	TREM-ACTN	ND	FALSE	Lincoln County Landfill		Landfill
1-00584	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00609	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00611	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00613	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00614	PLM-9002	TREM-ACTN	ND	FALSE	Lincoln County Landfill		Landfill
1-00619	PLM-9002	TREM-ACTN	ND	FALSE	Lincoln County Landfill		Landfill
1-00621	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00623	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00628	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00631	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00633	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00635	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00638	PLM-9002	TREM-ACTN	<	TRUE	Lincoln County Landfill		Landfill
1-00686	PLM-9002	TREM-ACTN	<	TRUE	303 Farm To Market Rd		Residential
1-00694	PLM-9002	TREM-ACTN	ND	FALSE	516 Farm To Market Rd		Residential
1-00705	PLM-9002	TREM-ACTN	ND	FALSE	2293 Kootenai River Rd		Residential
1-00708	PLM-9002	TREM-ACTN	ND	FALSE	2293 Kootenai River Rd		Residential
1-00713	PLM-9002	TREM-ACTN	ND	FALSE	2293 Kootenai River Rd		Residential
1-00734	PLM-9002	TREM-ACTN	ND	FALSE	218 Manor Dr		Residential
1-00735	PLM-9002	TREM-ACTN	<	TRUE	218 Manor Dr		Residential
1-00752	PLM-9002	TREM-ACTN	<	TRUE	1417 Washington Ave		Residential
1-00762	PLM-9002	TREM-ACTN	ND	FALSE	237 W. Cedar St		Residential
1-00774	PLM-9002	TREM-ACTN	<	TRUE	511 Louisiana Ave		Residential
1-00793	PLM-9002	TREM-ACTN	<	TRUE	154 Ski Rd		Residential
1-00860	PLM-9002	TREM-ACTN	<	TRUE	4304 Highway 37 North		Residential
1-00861	PLM-9002	TREM-ACTN	<	TRUE	4304 Highway 37 North		Residential
1-00862	PLM-9002	TREM-ACTN	<	TRUE	4304 Highway 37 North		Residential
1-00866	PLM-9002	TREM-ACTN	<	TRUE	580 Greens Ferry Rd		Residential
1-00870	PLM-9002	TREM-ACTN	<	TRUE	164 Yellowtail Rd		Residential
1-00908	PLM-9002	TREM-ACTN	<	TRUE	511 E. Spruce St		Residential

1-02271	PLM-9002	TREM-ACTN	<	1%	TRUE:1024 Montana Ave	Daycare
1-02286	PLM-9002	TREM-ACTN		21%	TRUE:Middle School	Municipal
1-02286	PLM-9002	TREM-ACTN	ND	1%	FALSE:Middle School	Municipal
1-02288	PLM-9002	TREM-ACTN		31%	TRUE:Screening Plant	Commercial
1-02288	PLM-9002	TREM-ACTN	ND	1%	FALSE:Screening Plant	Commercial
1-02289	PLM-9002	TREM-ACTN		51%	TRUE:Screening Plant	Commercial
1-02289	PLM-9002	TREM-ACTN	ND	1%	FALSE:Screening Plant	Commercial
1-02295	PLM-9002	TREM-ACTN		31%	TRUE:Screening Plant	Commercial
1-02295	PLM-9002	TREM-ACTN	<	11%	TRUE:Screening Plant	Commercial
1-02296	PLM-9002	TREM-ACTN		21%	TRUE:Screening Plant	Commercial
1-02297	PLM-9002	TREM-ACTN		21%	TRUE:Screening Plant	Commercial
1-02299	PLM-9002	TREM-ACTN		31%	TRUE:Screening Plant	Commercial
1-02300	PLM-9002	TREM-ACTN	<	11%	TRUE:Screening Plant	Commercial
1-02301	PLM-9002	TREM-ACTN		21%	TRUE:Screening Plant	Commercial
1-02339	PLM-9002	TREM-ACTN	ND	1%	FALSE:56 Heights Rd	Residential
1-02340	PLM-9002	TREM-ACTN	ND	1%	FALSE:56 Heights Rd	Residential
1-02345	PLM-9002	TREM-ACTN	<	11%	TRUE:Flyway/ Kootenai River Bank	Commercial
1-02349	PLM-9002	TREM-ACTN	<	11%	TRUE:Flyway/ Kootenai River Bank	Commercial
1-02353	PLM-9002	TREM-ACTN	<	11%	TRUE:Flyway/ Kootenai River Bank	Commercial
1-02360	PLM-9002	TREM-ACTN		21%	TRUE:4241 Highway 37 North	Residential
1-02362	PLM-9002	TREM-ACTN	ND	1%	FALSE:3733 Highway 37	Residential
1-02382	PLM-9002	TREM-ACTN	ND	1%	FALSE:491 Swede Gulch Rd	Residential
1-02386	PLM-9002	TREM-ACTN	<	11%	TRUE:High School	Municipal
1-02387	PLM-9002	TREM-ACTN		51%	TRUE:High School	Municipal
1-02388	PLM-9002	TREM-ACTN		81%	TRUE:High School	Municipal
1-02389	PLM-9002	TREM-ACTN	<	11%	TRUE:High School	Municipal
1-02397	PLM-9002	TREM-ACTN	<	11%	TRUE:Middle School	Municipal
1-02397	PLM-9002	TREM-ACTN	ND	1%	FALSE:Middle School	Municipal
1-02401	PLM-9002	TREM-ACTN	<	11%	TRUE:Middle School	Municipal
1-02407	PLM-9002	TREM-ACTN		151%	TRUE:Middle School	Municipal
1-02408	PLM-9002	TREM-ACTN		31%	TRUE:Middle School	Municipal
1-02413	PLM-9002	TREM-ACTN	<	11%	TRUE:189 Swede Gulch Dr	Residential
1-02414	PLM-9002	TREM-ACTN	<	11%	TRUE:189 Swede Gulch Dr	Residential
1-02426	PLM-9002	TREM-ACTN		31%	TRUE:Screening Plant	Commercial
1-02427	PLM-9002	TREM-ACTN		21%	TRUE:Screening Plant	Commercial
1-02428	PLM-9002	TREM-ACTN		151%	TRUE:Screening Plant	Commercial
1-02430	PLM-9002	TREM-ACTN		201%	TRUE:Screening Plant	Commercial
1-02431	PLM-9002	TREM-ACTN		201%	TRUE:Screening Plant	Commercial
1-02433	PLM-9002	TREM-ACTN		31%	TRUE:Screening Plant	Commercial
1-02435	PLM-9002	TREM-ACTN		31%	TRUE:Screening Plant	Commercial
1-02437	PLM-9002	TREM-ACTN		51%	TRUE:Screening Plant	Commercial
1-02440	PLM-9002	TREM-ACTN		151%	TRUE:Screening Plant	Commercial
1-02441	PLM-9002	TREM-ACTN		101%	TRUE:Screening Plant	Commercial
1-02657	PLM-9002	TREM-ACTN	<	11%	TRUE:High School	Municipal
1-02658	PLM-9002	TREM-ACTN	ND	1%	FALSE:High School	Municipal
1-02660	PLM-9002	TREM-ACTN	ND	1%	FALSE:High School	Municipal
1-02711	PLM-9002	TREM-ACTN	<	11%	TRUE:Plummer Elementary	Municipal
1-02784	PLM-9002	TREM-ACTN	ND	1%	FALSE:Middle School	Municipal
1-02785	PLM-9002	TREM-ACTN	<	11%	TRUE:Middle School	Municipal
1-02839	PLM-9002	TREM-ACTN	<	11%	TRUE:Middle School	Municipal
1-02845	PLM-9002	TREM-ACTN		21%	TRUE:Middle School	Municipal
1-02847	PLM-9002	TREM-ACTN		21%	TRUE:Middle School	Municipal
1-02850	PLM-9002	TREM-ACTN		21%	TRUE:Middle School	Municipal
1-02853	PLM-9002	TREM-ACTN		21%	TRUE:Middle School	Municipal
1-02980	PLM-9002	TREM-ACTN	ND	1%	FALSE:Champion Hall Rd	Roadway
1-02981	PLM-9002	TREM-ACTN	<	11%	TRUE:Champion Hall Rd	Roadway
1-02982	PLM-9002	TREM-ACTN	ND	1%	FALSE:Champion Hall Rd	Roadway
1-02983	PLM-9002	TREM-ACTN		51%	TRUE:Champion Hall Rd	Roadway
1-02984	PLM-9002	TREM-ACTN	<	11%	TRUE:Champion Hall Rd	Roadway
1-02985	PLM-9002	TREM-ACTN	<	11%	TRUE:3496 Highway 2 South	Residential

1-03614	PLM-9002	TREM-ACTN	ND	%	FALSE	12 Granite Ave	Residential
1-03621	PLM-9002	TREM-ACTN	ND	%	FALSE	104 Granite Ave	Residential
1-03631	PLM-9002	TREM-ACTN	ND	%	FALSE	1573 Kootenai River Rd	Residential
1-03632	PLM-9002	TREM-ACTN		31%	TRUE	1573 Kootenai River Rd	Residential
1-03642	PLM-9002	TREM-ACTN	<	11%	TRUE	521 W. 2nd St	Residential
1-03643	PLM-9002	TREM-ACTN	ND	%	FALSE	521 W. 2nd St	Residential
1-03644	PLM-9002	TREM-ACTN	<	11%	TRUE	521 W. 2nd St	Residential
1-03647	PLM-9002	TREM-ACTN	<	11%	TRUE	76 Pine Grove Place	Residential
1-03652	PLM-9002	TREM-ACTN	<	11%	TRUE	3603 Highway 2 South	Residential
1-03656	PLM-9002	TREM-ACTN	<	11%	TRUE	576 Reese Ct. #43	Residential
1-03657	PLM-9002	TREM-ACTN	<	11%	TRUE	576 Reese Ct. #43	Residential
1-03660	PLM-9002	TREM-ACTN	<	11%	TRUE	406 Louisiana Ave	Residential
1-03665	PLM-9002	TREM-ACTN	<	11%	TRUE	842 Cabinet Heights Rd	Residential
1-03666	PLM-9002	TREM-ACTN	<	11%	TRUE	842 Cabinet Heights Rd	Residential
1-03667	PLM-9002	TREM-ACTN	ND	%	FALSE	88 Collins Ave	Residential
1-03668	PLM-9002	TREM-ACTN	<	11%	TRUE	88 Collins Ave	Residential
1-03669	PLM-9002	TREM-ACTN	<	11%	TRUE	88 Collins Ave	Residential
1-03670	PLM-9002	TREM-ACTN	<	11%	TRUE	88 Collins Ave	Residential
1-03671	PLM-9002	TREM-ACTN	<	11%	TRUE	88 Collins Ave	Residential
1-03672	PLM-9002	TREM-ACTN	<	11%	TRUE	1513 Lolo Ave	Residential
1-03673	PLM-9002	TREM-ACTN	ND	%	FALSE	1513 Lolo Ave	Residential
1-03674	PLM-9002	TREM-ACTN	ND	%	FALSE	1513 Lolo Ave	Residential
1-03675	PLM-9002	TREM-ACTN	ND	%	FALSE	1513 Lolo Ave	Residential
1-03676	PLM-9002	TREM-ACTN		21%	TRUE	319 Norman Ave	Residential
1-03678	PLM-9002	TREM-ACTN	ND	%	FALSE	1221 Montana Ave	Residential
1-03679	PLM-9002	TREM-ACTN		21%	TRUE	1221 Montana Ave	Residential
1-03684	PLM-9002	TREM-ACTN	ND	%	FALSE	224 Valley of the Moon Rd	Residential
1-03693	PLM-9002	TREM-ACTN	<	11%	TRUE	3496 Highway 2 South	Residential
1-03699	PLM-9002	TREM-ACTN	<	11%	TRUE	303 E. Cedar	Residential
1-03703	PLM-9002	TREM-ACTN	<	11%	TRUE	303 E. Cedar	Residential
1-03704	PLM-9002	TREM-ACTN	<	11%	TRUE	303 E. Cedar	Residential
1-03714	PLM-9002	TREM-ACTN	<	11%	TRUE	113 Bobtail Rd	Residential
1-03716	PLM-9002	TREM-ACTN	<	11%	TRUE	113 Bobtail Rd	Residential
1-03717	PLM-9002	TREM-ACTN		21%	TRUE	113 Bobtail Rd	Residential
1-03719	PLM-9002	TREM-ACTN	ND	%	FALSE	35 Olbekson Rd	Residential
1-03721	PLM-9002	TREM-ACTN	ND	%	FALSE	35 Olbekson Rd	Residential
1-03723	PLM-9002	TREM-ACTN	ND	%	FALSE	35 Granite Ave	Residential
1-03724	PLM-9002	TREM-ACTN	ND	%	FALSE	35 Granite Ave	Residential
1-03725	PLM-9002	TREM-ACTN	ND	%	FALSE	35 Granite Ave	Residential
1-03726	PLM-9002	TREM-ACTN	<	11%	TRUE	35 Granite Ave	Residential
1-03727	PLM-9002	TREM-ACTN	<	11%	TRUE	35 Granite Ave	Residential
1-03728	PLM-9002	TREM-ACTN	<	11%	TRUE	35 Granite Ave	Residential
1-03729	PLM-9002	TREM-ACTN	<	11%	TRUE	522 Reserve Rd	Residential
1-03733	PLM-9002	TREM-ACTN	<	11%	TRUE	3591 Highway 2 South	Residential
1-03737	PLM-9002	TREM-ACTN	<	11%	TRUE	118 White Ave	Residential
1-03738	PLM-9002	TREM-ACTN	<	11%	TRUE	118 White Ave	Residential
1-03739	PLM-9002	TREM-ACTN	<	11%	TRUE	118 White Ave	Residential
1-03740	PLM-9002	TREM-ACTN	ND	%	FALSE	118 White Ave	Residential
1-03745	PLM-9002	TREM-ACTN	ND	%	FALSE	143 Crossway Ave	Residential
1-03747	PLM-9002	TREM-ACTN	<	11%	TRUE	143 Crossway Ave	Residential
1-03749	PLM-9002	TREM-ACTN	ND	%	FALSE	3705 Highway 2 South	Residential
1-03750	PLM-9002	TREM-ACTN	ND	%	FALSE	3705 Highway 2 South	Residential
1-03754	PLM-9002	TREM-ACTN	<	11%	TRUE	126 Pioneer Rd	Residential
1-03755	PLM-9002	TREM-ACTN	<	11%	TRUE	633 Greers Ferry Rd	Residential
1-03756	PLM-9002	TREM-ACTN	<	11%	TRUE	620 Vanderwood Rd	Residential
1-03757	PLM-9002	TREM-ACTN	<	11%	TRUE	34 Bowkers St	Residential
1-03758	PLM-9002	TREM-ACTN		11%	TRUE	34 Bowkers St	Residential
1-03760	PLM-9002	TREM-ACTN	ND	%	FALSE	620 Main St	Residential
1-03761	PLM-9002	TREM-ACTN	ND	%	FALSE	620 Main St	Residential
1-03762	PLM-9002	TREM-ACTN	ND	%	FALSE	65 Manor Dr	Residential



1-03961	PLM-9002	TREM-ACTN	ND	%	FALSE	567 Woodland Heights Rd	Residential
1-03962	PLM-9002	TREM-ACTN	ND	%	FALSE	567 Woodland Heights Rd	Residential
1-03963	PLM-9002	TREM-ACTN	ND	%	FALSE	567 Woodland Heights Rd	Residential
1-03964	PLM-9002	TREM-ACTN	ND	%	FALSE	567 Woodland Heights Rd	Residential
1-03965	PLM-9002	TREM-ACTN	ND	%	FALSE	3518 Highway 2 South	Residential
1-03966	PLM-9002	TREM-ACTN	<	1%	TRUE	3518 Highway 2 South	Residential
1-03967	PLM-9002	TREM-ACTN	ND	%	FALSE	622 Michigan Ave	Residential
1-03969	PLM-9002	TREM-ACTN	ND	%	FALSE	622 Michigan Ave	Residential
1-03970	PLM-9002	TREM-ACTN	<	1%	TRUE	1511 Dakota Ave	Residential
1-03973	PLM-9002	TREM-ACTN	<	1%	TRUE	1511 Dakota Ave	Residential
1-03974	PLM-9002	TREM-ACTN	<	1%	TRUE	404 Louisiana Ave	Residential
1-03976	PLM-9002	TREM-ACTN	<	1%	TRUE	404 Louisiana Ave	Residential
1-03978	PLM-9002	TREM-ACTN	<	1%	TRUE	404 Louisiana Ave	Residential
1-03979	PLM-9002	TREM-ACTN	<	1%	TRUE	404 Louisiana Ave	Residential
1-04002	PLM-9002	TREM-ACTN	<	1%	TRUE	387 Reserve Rd	Residential
1-04003	PLM-9002	TREM-ACTN	<	1%	TRUE	387 Reserve Rd	Residential
1-04025	PLM-9002	TREM-ACTN	ND	%	FALSE	417 Indian Head Rd	Residential
1-04026	PLM-9002	TREM-ACTN	ND	%	FALSE	417 Indian Head Rd	Residential
1-04028	PLM-9002	TREM-ACTN	<	1%	TRUE	417 Indian Head Rd	Residential
1-04029	PLM-9002	TREM-ACTN	ND	%	FALSE	417 Indian Head Rd	Residential
1-04031	PLM-9002	TREM-ACTN	<	1%	TRUE	8978 Highway 2 South	Residential
1-04032	PLM-9002	TREM-ACTN	<	1%	TRUE	1637 Farm To Market Rd	Residential
1-04041	PLM-9002	TREM-ACTN	<	1%	TRUE	1410 Main St	Residential
1-04042	PLM-9002	TREM-ACTN	ND	%	FALSE	1410 Main St	Residential
1-04049	PLM-9002	TREM-ACTN	<	1%	TRUE	13 Crossover Rd	Residential
1-04057	PLM-9002	TREM-ACTN	ND	%	FALSE	1320 Louisiana Ave	Residential
1-04060	PLM-9002	TREM-ACTN	<	1%	TRUE	191 Farm To Market Rd	Residential
1-04061	PLM-9002	TREM-ACTN	ND	%	FALSE	191 Farm To Market Rd	Residential
1-04062	PLM-9002	TREM-ACTN	ND	%	FALSE	191 Farm To Market Rd	Residential
1-04064	PLM-9002	TREM-ACTN	<	1%	TRUE	910 Main St	Residential
1-04065	PLM-9002	TREM-ACTN	ND	%	FALSE	910 Main St	Residential
1-04067	PLM-9002	TREM-ACTN	<	1%	TRUE	910 Main St	Residential
1-04068	PLM-9002	TREM-ACTN	<	1%	TRUE	910 Main St	Residential
1-04111	PLM-9002	TREM-ACTN	ND	%	FALSE	311 Grannys Garden Rd	Residential
1-04113	PLM-9002	TREM-ACTN	<	1%	TRUE	311 Grannys Garden Rd	Residential
1-04115	PLM-9002	TREM-ACTN	<	1%	TRUE	124 W. Cedar St	Residential
1-04116	PLM-9002	TREM-ACTN	ND	%	FALSE	124 W. Cedar St	Residential
1-04120	PLM-9002	TREM-ACTN	<	1%	TRUE	38 Rainbow Ln	Residential
1-04122	PLM-9002	TREM-ACTN	ND	%	FALSE	1823 Highway 2 West	Residential
1-04125	PLM-9002	TREM-ACTN		2%	TRUE	2608 Second St Ext	Residential
1-04126	PLM-9002	TREM-ACTN		2%	TRUE	2608 Second St Ext	Residential
1-04127	PLM-9002	TREM-ACTN	<	1%	TRUE	2608 Second St Ext	Residential
1-04128	PLM-9002	TREM-ACTN		1%	TRUE	2608 Second St Ext	Residential
1-04131	PLM-9002	TREM-ACTN	<	1%	TRUE	35 Avenue B	Residential
1-04132	PLM-9002	TREM-ACTN	<	1%	TRUE	35 Avenue B	Residential
1-04133	PLM-9002	TREM-ACTN	<	1%	TRUE	35 Avenue B	Residential
1-04135	PLM-9002	TREM-ACTN	<	1%	TRUE	350 Shalom Dr	Residential
1-04136	PLM-9002	TREM-ACTN	<	1%	TRUE	350 Shalom Dr	Residential
1-04138	PLM-9002	TREM-ACTN	ND	%	FALSE	74 Midland Rd	Residential
1-04139	PLM-9002	TREM-ACTN	<	1%	TRUE	74 Midland Rd	Residential
1-04140	PLM-9002	TREM-ACTN	<	1%	TRUE	76 Pine St	Residential
1-04141	PLM-9002	TREM-ACTN	<	1%	TRUE	76 Pine St	Residential
1-04142	PLM-9002	TREM-ACTN	<	1%	TRUE	3552 Highway 2 South	Residential
1-04143	PLM-9002	TREM-ACTN	ND	%	FALSE	3552 Highway 2 South	Residential
1-04151	PLM-9002	TREM-ACTN	<	1%	TRUE	38 Spencer Hill Way	Residential
1-04152	PLM-9002	TREM-ACTN		3%	TRUE	38 Spencer Hill Way	Residential
1-04153	PLM-9002	TREM-ACTN	<	1%	TRUE	620 Dakota Ave	Residential
1-04154	PLM-9002	TREM-ACTN	<	1%	TRUE	620 Dakota Ave	Residential
1-04155	PLM-9002	TREM-ACTN	<	1%	TRUE	620 Dakota Ave	Residential
1-04156	PLM-9002	TREM-ACTN	ND	%	FALSE	160 Lower Quartz Creek Road	Residential

1-04391	PLM-9002	TREM-ACTN	<	11%	TRUE 240 Jay Effar Rd	Residential
1-04393	PLM-9002	TREM-ACTN	<	11%	TRUE 259 Remps Rd	Residential
1-04394	PLM-9002	TREM-ACTN	<	11%	TRUE 259 Remps Rd	Residential
1-04397	PLM-9002	TREM-ACTN	ND	1%	FALSE 171 Upper Flower Creek Rd	Residential
1-04402	PLM-9002	TREM-ACTN	<	11%	TRUE 171 Westland Rd	Residential
1-04405	PLM-9002	TREM-ACTN	ND	1%	FALSE 496 Jay Effar Rd	Residential
1-04407	PLM-9002	TREM-ACTN	<	11%	TRUE 10 Park St	Residential
1-04408	PLM-9002	TREM-ACTN	<	11%	TRUE 10 Park St	Residential
1-04409	PLM-9002	TREM-ACTN	ND	1%	FALSE 10 Park St	Residential
1-04410	PLM-9002	TREM-ACTN	ND	1%	FALSE 10 Park St	Residential
1-04411	PLM-9002	TREM-ACTN	<	11%	TRUE 10 Park St	Residential
1-04412	PLM-9002	TREM-ACTN	ND	1%	FALSE 10 Park St	Residential
1-04414	PLM-9002	TREM-ACTN	ND	1%	FALSE 690 Jay Effar Rd	Residential
1-04416	PLM-9002	TREM-ACTN	<	11%	TRUE 920 Main St	Residential
1-04417	PLM-9002	TREM-ACTN	<	11%	TRUE 920 Main St	Residential
1-04418	PLM-9002	TREM-ACTN	<	11%	TRUE 920 Main St	Residential
1-04430	PLM-9002	TREM-ACTN	ND	1%	FALSE 104 Colorado Ave	Residential
1-04436	PLM-9002	TREM-ACTN	ND	1%	FALSE 418 Idaho Ave	Residential
1-04437	PLM-9002	TREM-ACTN	<	11%	TRUE 334 Conifer Rd	Residential
1-04442	PLM-9002	TREM-ACTN	<	11%	TRUE 521 W. 2nd St	Residential
1-04443	PLM-9002	TREM-ACTN	<	11%	TRUE 521 W. 2nd St	Residential
1-04445	PLM-9002	TREM-ACTN	<	11%	TRUE 908 Mineral Ave	Residential
1-04450	PLM-9002	TREM-ACTN	<	11%	TRUE 1221 Montana Ave	Residential
1-04495	PLM-9002	TREM-ACTN	<	11%	TRUE 402 E. Missoula Ave	Residential
1-04497	PLM-9002	TREM-ACTN	<	11%	TRUE 402 E. Missoula Ave	Residential
1-04500	PLM-9002	TREM-ACTN	ND	1%	FALSE 1212 Louisiana Ave	Residential
1-04501	PLM-9002	TREM-ACTN	ND	1%	FALSE 1212 Louisiana Ave	Residential
1-04505	PLM-9002	TREM-ACTN	ND	1%	FALSE 746 E. 5th St	Residential
1-04506	PLM-9002	TREM-ACTN	<	11%	TRUE 1215 Big Bend Rd	Residential
1-04507	PLM-9002	TREM-ACTN	<	11%	TRUE 1215 Big Bend Rd	Residential
1-04524	PLM-9002	TREM-ACTN	<	11%	TRUE 86 Paliga Dr	Residential
1-04525	PLM-9002	TREM-ACTN	<	11%	TRUE 86 Paliga Dr	Residential
1-04526	PLM-9002	TREM-ACTN	<	11%	TRUE 86 Paliga Dr	Residential
1-04536	PLM-9002	TREM-ACTN	<	11%	TRUE 589 Farm To Market Rd	Residential
1-04552	PLM-9002	TREM-ACTN	ND	1%	FALSE 1405 Nevada Ave	Residential
1-04555	PLM-9002	TREM-ACTN	<	11%	TRUE 1762 Farm To Market Rd	Residential
1-04556	PLM-9002	TREM-ACTN	<	11%	TRUE 1762 Farm To Market Rd	Residential
1-04557	PLM-9002	TREM-ACTN	<	11%	TRUE 1762 Farm To Market Rd	Residential
1-04558	PLM-9002	TREM-ACTN	<	11%	TRUE 208 Mineral Ave	Residential
1-04559	PLM-9002	TREM-ACTN	<	11%	TRUE 208 Mineral Ave	Residential
1-04561	PLM-9002	TREM-ACTN	<	11%	TRUE 203 E. 2nd St	Residential
1-06807	PLM-9002	TREM-ACTN	ND	0%	FALSE 38 Parmenter Dr	Residential
1-06809	PLM-9002	TREM-ACTN	ND	0%	FALSE 38 Parmenter Dr	
1-06810	PLM-9002	TREM-ACTN	ND	0%	FALSE 38 Parmenter Dr	
1-06811	PLM-9002	TREM-ACTN	ND	0%	FALSE 38 Parmenter Dr	
1R-08523	PLM-9002	TREM-ACTN	ND	1%	FALSE 819 Cabinet Heights Rd	Residential
1R-10006	PLM-9002	TREM-ACTN	<	11%	TRUE KDC Bluffs	Commercial
1R-10007	PLM-9002	TREM-ACTN	<	31%	TRUE KDC Bluffs	Commercial
1R-10421	PLM-9002	TREM-ACTN	<	11%	TRUE 500 Highway 37 North	Commercial
1R-10422	PLM-9002	TREM-ACTN	<	11%	TRUE 500 Highway 37 North	Commercial
1R-10423	PLM-9002	TREM-ACTN	<	11%	TRUE 500 Highway 37 North	Commercial
1R-10428	PLM-9002	TREM-ACTN	<	11%	TRUE 500 Highway 37 North	Commercial
1R-10429	PLM-9002	TREM-ACTN	ND	1%	FALSE 500 Highway 37 North	Commercial
1R-10430	PLM-9002	TREM-ACTN	<	11%	TRUE 500 Highway 37 North	Commercial
1R-10431	PLM-9002	TREM-ACTN	ND	1%	FALSE 500 Highway 37 North	Commercial
1R-10432	PLM-9002	TREM-ACTN	ND	1%	FALSE 500 Highway 37 North	Commercial
1R-10433	PLM-9002	TREM-ACTN	ND	1%	FALSE 500 Highway 37 North	Commercial
1R-10434	PLM-9002	TREM-ACTN	<	11%	TRUE 500 Highway 37 North	Commercial
1R-10435	PLM-9002	TREM-ACTN	<	11%	TRUE 500 Highway 37 North	Commercial
1R-12701	PLM-9002	TREM-ACTN	<	31%	TRUE KDC Bluffs	Commercial

## TECHNICAL MEMO 2

### OCCURRENCE OF ASBESTOS IN LIBBY VERMICULITE INSULATION

#### 1.0 INTRODUCTION

USEPA Region 8 is currently planning a large-scale investigation to identify potentially significant sources of asbestos in and about the community of Libby. Available data from the site support the conclusion that Libby vermiculite insulation (LVI) contains asbestos fibers, and that disturbance of the LVI can lead to release of asbestos fibers into air (Weis 2001a, 2001b). Thus, LVI is one of the sources of chief public health concern to EPA at the Libby site.

Because of the cost and time required to perform a microscopic analysis of each LVI sample, EPA wished to assess the reliability of the assumption that all samples of LVI should be considered a potential source of asbestos fibers. This technical memo summarizes the data bearing on that question.

#### 2.0 APPROACH

A query of the Libby database was performed on 05/03/02 to isolate all samples that were classified as "insulation". These samples were classified into four bins according to the results of an analysis for asbestos by polarized light microscopy (PLM):

- No PLM results available
- Non-detected
- Trace (asbestos visible by PLM, but level is too low to provide a quantitative estimate)
- Quantifiable ( $\geq 1\%$  asbestos by mass)

The design of the query and the resulting output are provided as Attachment 1.

#### 3.0 RESULTS

A total of 126 insulation samples were located. Of these, 125 had results of an analysis by PLM. These results are summarized below:

# Libby, Montana

## Locations of Buildings With Libby Vermiculite Insulation

Figure 2A

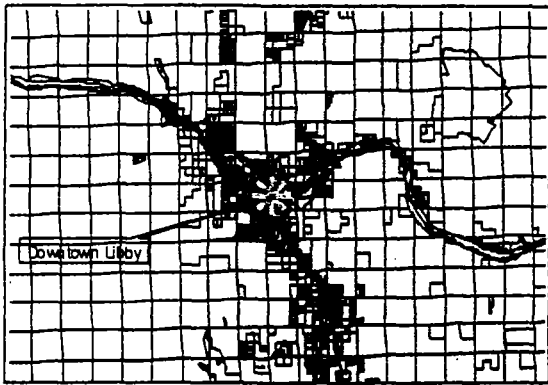
### Soil Sample Results

- ND
- TRACE
- $\geq 1\%$



Approximate Parcel  
Boundaries

### LOCUS MAP



May, 2002

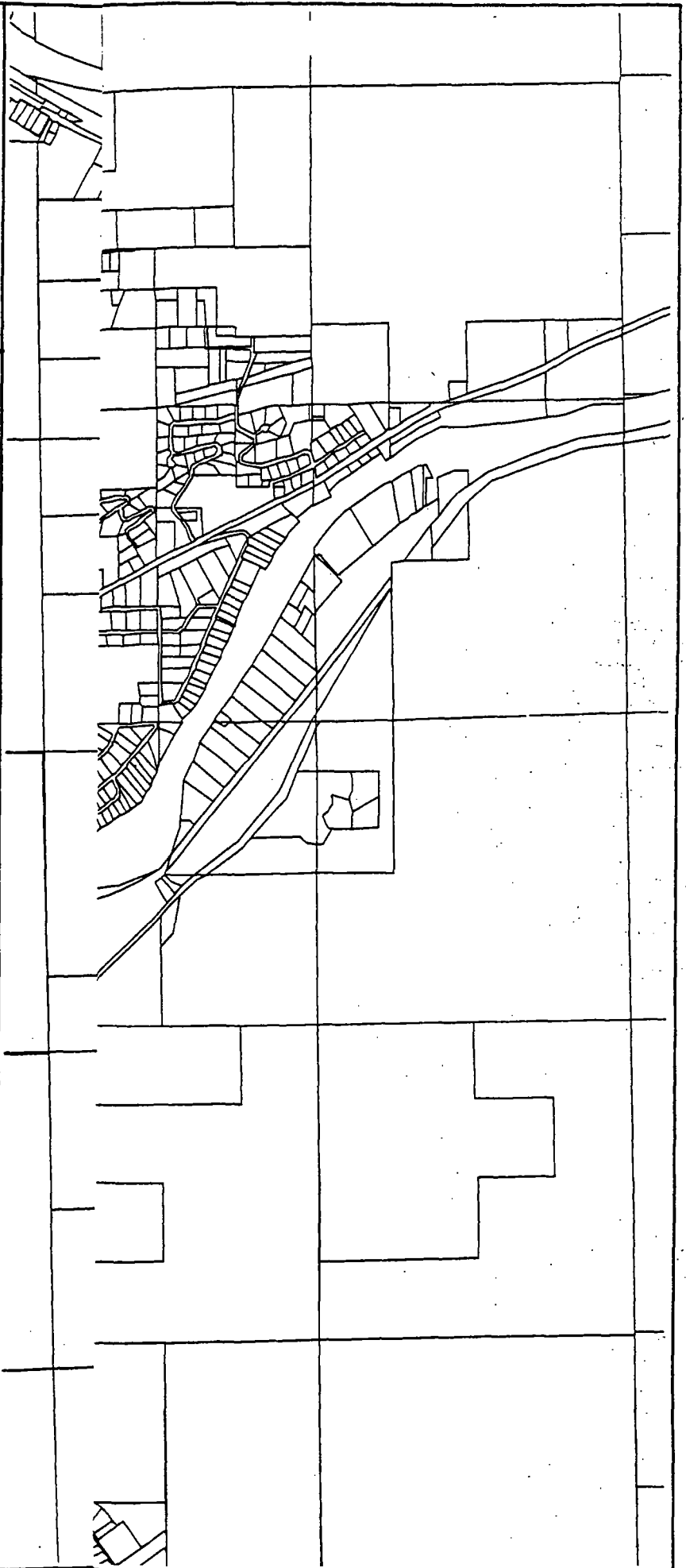
Map Projection UTM Zone 11 NAD83 FT



# CDM



2500 0 2500 Feet



# Libby, Montana

## Locations of Buildings With Libby Vermiculite Insulation

Figure 2B

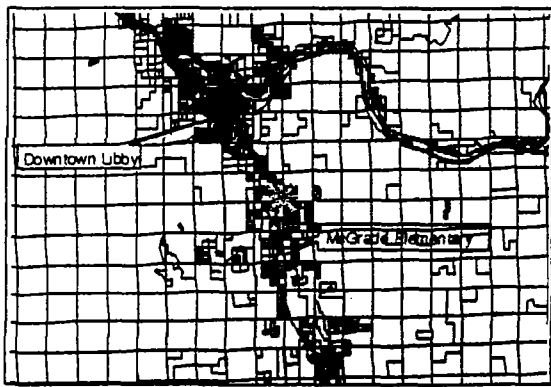
### Soil Sample Results

- ND
- TRACE
- $\geq 1\%$



Approximate Parcel  
Boundaries

### LOCUS MAP



May, 2002

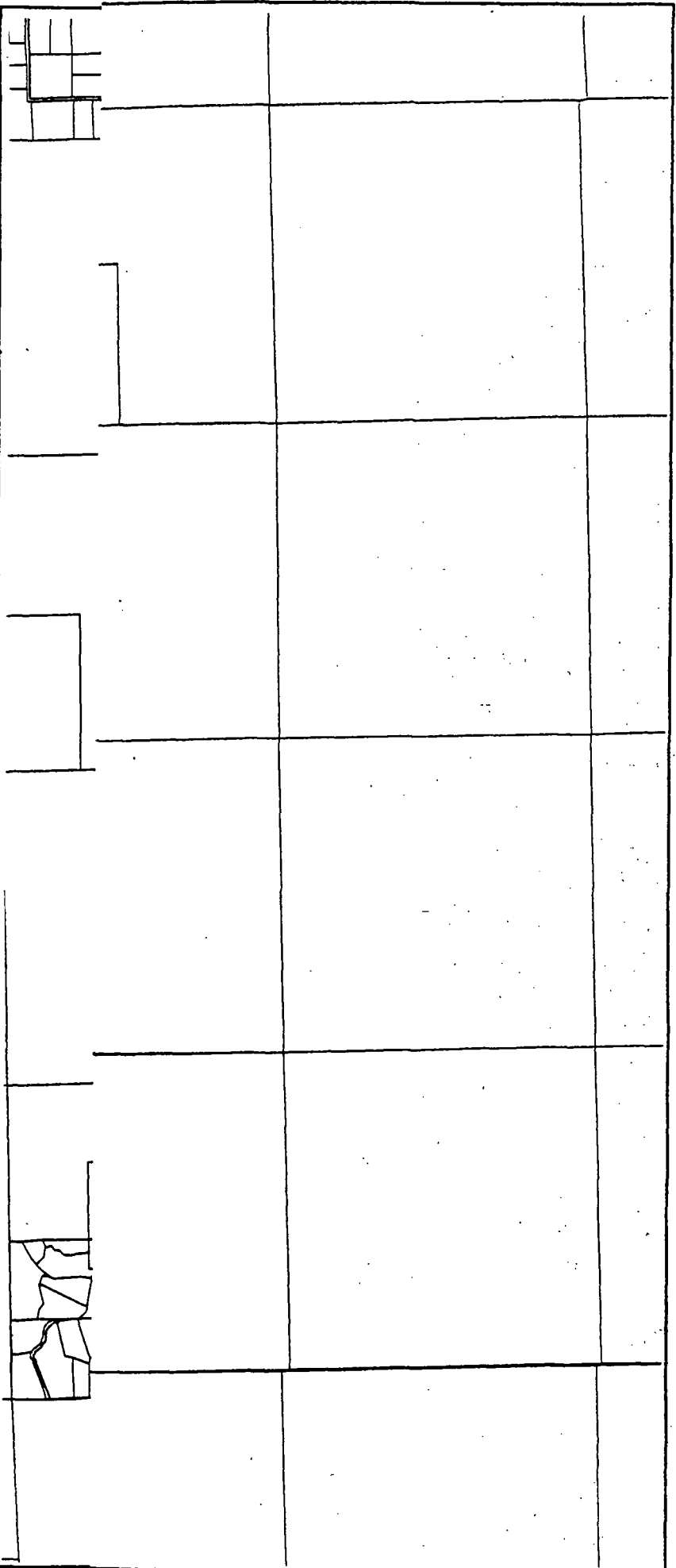
Map Projection UTM Zone 11 NAD83 FT



# CDM



2500 0 2500 Feet



# Libby, Montana

## Locations of Buildings With Libby Vermiculite Insulation

Figure 2C

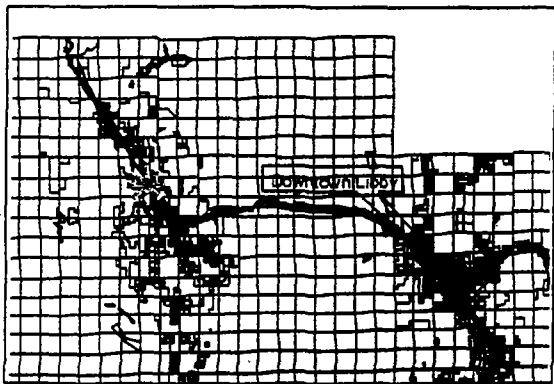
### Soil Sample Results

- ND
- TRACE
- $\geq 1\%$



Approximate Parcel  
Boundaries

### LOCUS MAP



May, 2002

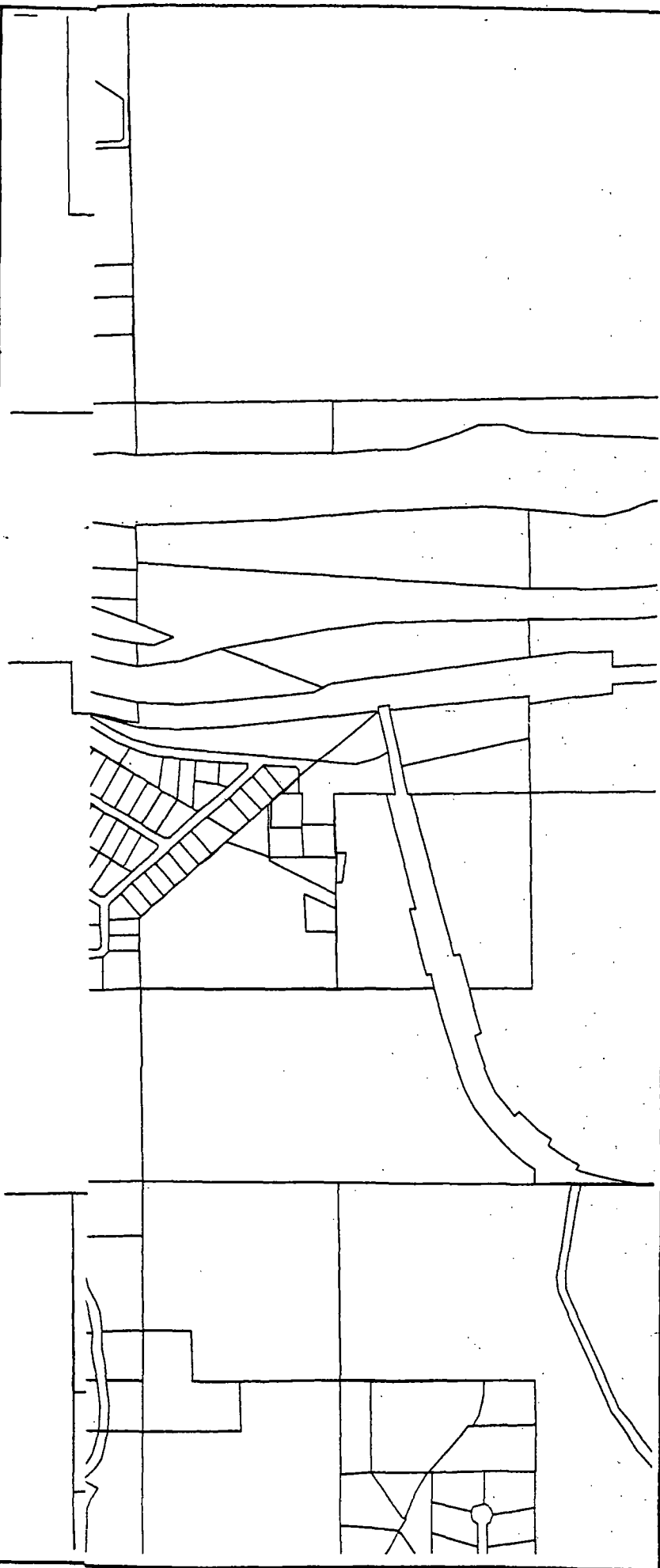
Map Projection UTM Zone 11 NAD83 FT



# CDM



1000 0 1000 Feet



ATTACHMENT 1

DATA

PLM Results for Samples of ZAI

IndexID	AnalysisMethod	Parameter	Result	Concentration	Units	Detection	Location	Property Group	Desc	Location and Use Desc
1-00092	PLM-9002	TREM-ACTN	<	1%		TRUE	1109 Louisiana Ave			Residential
1-00093	PLM-9002	TREM-ACTN	<	1%		TRUE	785 Farm To Market Rd			Residential
1-00094	PLM-9002	TREM-ACTN	<	1%		TRUE	785 Farm To Market Rd			Residential
1-00258	PLM-9002	TREM-ACTN	<	1%		TRUE	1006 Treasure Ave			Residential
1-00259	PLM-9002	TREM-ACTN	<	1%		TRUE	1417 Washington Ave			Residential
1-00260	PLM-9002	TREM-ACTN	<	1%		TRUE	626 W. 2nd St			Residential
1-00280	PLM-9002	TREM-ACTN	<	1%		TRUE	505 Louisiana Ave			Residential
1-00281	PLM-9002	TREM-ACTN	<	1%		TRUE	519 Louisiana Ave			Residential
1-00282	PLM-9002	TREM-ACTN	<	1%		TRUE	620 Utah Ave			Residential
1-00283	PLM-9002	TREM-ACTN	<	1%		TRUE	703 California Ave			Residential
1-00284	PLM-9002	TREM-ACTN	<	1%		TRUE	Spur Loop Rd			Residential
1-00325	PLM-9002	TREM-ACTN	<	1%		TRUE	516 W. 2nd St			Residential
1-00326	PLM-9002	TREM-ACTN	<	1%		TRUE	507 Minnesota Ave			Residential
1-00327	PLM-9002	TREM-ACTN	<	1%		TRUE	175 Park St			Residential
1-00328	PLM-9002	TREM-ACTN	<	1%		TRUE	1026 Washington Ave			Residential
1-00329	PLM-9002	TREM-ACTN	<	1%		TRUE	1305 Dakota Ave			Residential
1-00351	PLM-9002	TREM-ACTN	<	1%		TRUE	516 Montana Ave			Residential
1-00352	PLM-9002	TREM-ACTN	<	1%		TRUE	102 9th St			Residential
1-00353	PLM-9002	TREM-ACTN	<	1%		TRUE	1503 Kaniksu Ave			Residential
1-00354	PLM-9002	TREM-ACTN	<	1%		TRUE	511 Louisiana Ave			Residential
1-00355	PLM-9002	TREM-ACTN	<	1%		TRUE	2293 Kootenai River Rd			Residential
1-00356	PLM-9002	TREM-ACTN	<	1%		TRUE	2293 Kootenai River Rd			Residential
1-00357	PLM-9002	TREM-ACTN	<	1%		TRUE	2293 Kootenai River Rd			Residential
1-00460	PLM-9002	TREM-ACTN	ND		%	FALSE	1004 Louisiana Ave			Residential
1-00461	PLM-9002	TREM-ACTN	<	1%		TRUE	1218 Montana Ave			Residential
1-00488	PLM-9002	TREM-ACTN		5%		TRUE	303 Farm To Market Rd			Residential
1-00489	PLM-9002	TREM-ACTN	<	1%		TRUE	80 Mahoney Rd			Residential
1-00490	PLM-9002	TREM-ACTN	<	1%		TRUE	1306 Minnesota Ave			Residential
1-00514	PLM-9002	TREM-ACTN	<	1%		TRUE	154 Ski Rd			Residential
1-00515	PLM-9002	TREM-ACTN	<	1%		TRUE	803 Mineral Ave			Commercial
1-00536	PLM-9002	TREM-ACTN	<	1%		TRUE	32 Burr Ave			Residential
1-00647	PLM-9002	TREM-ACTN	ND		%	FALSE	418 Mineral Ave			Commercial
1-00648	PLM-9002	TREM-ACTN	ND		%	FALSE	418 Mineral Ave			Commercial
1-00668	PLM-9002	TREM-ACTN	<	1%		TRUE	603 Montana Ave			Residential
1-00669	PLM-9002	TREM-ACTN	<	1%		TRUE	226 Spencer Rd			Residential
1-00670	PLM-9002	TREM-ACTN	<	1%		TRUE	1004 Mineral Ave			Residential
1-00671	PLM-9002	TREM-ACTN	<	1%		TRUE	1421 Main Ave			Residential
1-00672	PLM-9002	TREM-ACTN	<	1%		TRUE	1615 Main St			Residential
1-01111	PLM-9002	TREM-ACTN	<	1%		TRUE	56 Enders Dr			Residential
1-01112	PLM-9002	TREM-ACTN	<	1%		TRUE	1031 Louisiana Ave			Residential
1-01113	PLM-9002	TREM-ACTN	<	1%		TRUE	76 Pine St			Residential
1-01114	PLM-9002	TREM-ACTN		2%		TRUE	284 Terrace View Rd			Residential
1-01115	PLM-9002	TREM-ACTN	<	1%		TRUE	416 4th St			Residential
1-01116	PLM-9002	TREM-ACTN	<	1%		TRUE	512 W. 6th St			Residential
1-01129	PLM-9002	TREM-ACTN	<	1%		TRUE	16329 Bull Lake Rd			Residential
1-01130	PLM-9002	TREM-ACTN	<	1%		TRUE	392 Garrison Rd			Residential
1-01131	PLM-9002	TREM-ACTN	<	1%		TRUE	819 Freeman Ridge Rd			Residential
1-01132	PLM-9002	TREM-ACTN		2%		TRUE	819 Freeman Ridge Rd			Residential
1-01133	PLM-9002	TREM-ACTN	<	1%		TRUE	208 Mineral Ave			Residential
1-01275	PLM-9002	TREM-ACTN	<	1%		TRUE	453 Hogan Dr			Residential
1-01276	PLM-9002	TREM-ACTN	<	1%		TRUE	25 Evergreen Rd			Residential
1-01277	PLM-9002	TREM-ACTN	<	1%		TRUE	407 Dakota Ave			Residential
1-01278	PLM-9002	TREM-ACTN	<	1%		TRUE	614 California Ave			Residential



BU-00011	PLM-9002	TREM-ACTN	ND	%	FALSE	115 W. 2nd St	Unknown
BU-00012	PLM-9002	TREM-ACTN		21%	TRUE	284 Terrace View Rd	Residential
BU-00013	PLM-9002	TREM-ACTN	<	11%	TRUE	208 E. Spruce St	Unknown
BU-00014	PLM-9002	TREM-ACTN	<	11%	TRUE	1020 California Ave	Residential
BU-00015	PLM-9002	TREM-ACTN	<	11%	TRUE	203 E. Spruce St	Residential
BU-00016	PLM-9002	TREM-ACTN	<	11%	TRUE	310 E. 5th St	Unknown
BU-00017	PLM-9002	TREM-ACTN	ND	%	FALSE	1218 Montana Ave	Residential
BU-00018	PLM-9002	TREM-ACTN		1.5%	TRUE	475 Fish Hatchery Rd	Residential
BU-00019	PLM-9002	TREM-ACTN	ND	%	FALSE	475 Fish Hatchery Rd	Residential
BU-00020	PLM-9002	TREM-ACTN	ND	%	FALSE	475 Fish Hatchery Rd	Residential
BU-00021	PLM-9002	TREM-ACTN	ND	%	FALSE	313 Colorado Ave	Residential
BU-00022	PLM-9002	TREM-ACTN	ND	%	FALSE	347 Voves St	Residential
BU-00023	PLM-9002	TREM-ACTN	<	11%	TRUE	310 Yellowtail Rd	Residential
BU-00024	PLM-9002	TREM-ACTN	ND	%	FALSE	179 Vicks Dr	Residential
BU-00025	PLM-9002	TREM-ACTN	<	11%	TRUE	1004 Louisiana Ave	Residential
BU-00026	PLM-9002	TREM-ACTN	<	11%	TRUE	271 Mahoney Rd	Residential
BU-00027	PLM-9002	TREM-ACTN	ND	%	FALSE	271 Mahoney Rd	Residential
BU-00028	PLM-9002	TREM-ACTN	ND	%	FALSE	1406 Utah Ave	Residential

## TECHNICAL MEMO 3

### EVALUATION OF THE NEED FOR INDOOR DUST SAMPLING AT BUILDINGS IN LIBBY WHERE VERMICULITE INSULATION IS PRESENT

#### 1.0 INTRODUCTION

USEPA Region 8 is currently planning a large-scale investigation to identify potentially significant sources of asbestos in and about the community of Libby. One of the sources of concern to EPA is Libby vermiculite insulation (LVI). This material has been shown to be capable of releasing relatively high concentrations of asbestos fibers into air when disturbed (Weis 2001a, 2001b, Grace 1976).

A second medium of potential concern at a building with LVI is indoor dust. This is because any asbestos fibers that have been released from the LVI or other sources may become entrained in indoor dust, and the dust may serve as a secondary source even after the primary source (e.g., the LVI) has been removed or contained.

Because of the cost and time required to perform a microscopic analysis of dust samples at each building where LVI is found to be present, EPA wished to consider whether it was reasonable to assume that dust at such a location might be a potential secondary source, and take steps to remove the dust without the need for sampling. This technical memo presents an assessment of the pros and cons of that approach.

#### 2.0 DATA SUMMARY

A query of the Libby database was performed on 05/03/02. First, a list of all samples of vermiculite insulation was prepared, and a list was prepared of the addresses of the locations where these samples were collected. Next, a list of all dust samples that were collected at any of the same locations (i.e., at buildings with LVI present) was prepared. Finally, the results of transmission electron microscopy (TEM) examination of these dust samples were tabulated and classified into two bins (detect or non-detect). Detects were defined as samples in which one or more Libby-class amphibole fibers were observed that had either a) an aspect ratio  $\geq 5:1$ , thickness  $\leq 0.5 \mu\text{m}$  and length  $\geq 5 \mu\text{m}$ , or b) an aspect ratio  $\geq 5:1$  and thickness  $> 0.5 \mu\text{m}$ . These dimensions were used because they include the size range suspected to be of greatest potential human health concern. Samples were assigned to the "Non-detect" bin if they did not contain one or more of the fibers above (even if Libby-class amphibole fibers were observed

followed this by the clearance test, clearance could be achieved in 1-2 days.

Finally, the incremental cost of performing automatic dust cleanups without prior testing are not expected to be substantial compared to the cost of testing before dust removal. The estimated relative costs are compared in the following table:

Activity	Cost per 100 Buildings	
	Optioun 1 Test dust before cleanup	Option 2 Cleanup dust without test
Dust collection (a)	\$62,500	\$0
Dust analysis (b)	\$140,000	\$0
Dust cleanup (c)	\$225,000	\$450,000
Total cost	\$427,500	\$450,000

(a) Assumes 3 composite samples and one blank per location

(b) Assumes 25 grid openings counted per sample

(c) Assume that 50% of post remediation dust samples contain asbestos, indicating the need for dust removal before clearance

#### 4.0 CONCLUSIONS

Based on a consideration of the long turnaround time before clearance if dust testing is required as well as the uncertainty associated with a non-detect in dust, it is concluded that it is reasonable and appropriate to perform an indoor dust removal at all homes in Libby that undergo LVI removal, and that this step is not contingent upon testing the dust for asbestos contamination. Any increment in cost (about 5% of the total cost) for Option 2 are more than justified by the decreased delay in allowing re-entry of building occupants, and will be partially or entirely defrayed by reduced per diem costs.

#### 5.0 REFERENCES

Grace, W.R.. 1976. Controlled Drop Air Sampling, July 23. Memo to HA Brown et al. Dated August 5, 1976. (103Z00768).

Weis, C.P. 2001a. Fibrous Amphibole Contamination in Soil and Dust at Multiple Locations in Libby Poses an Imminent and Substantial Endangerment to Public Health: an Addendum to my Memorandum of May 10, 2000. Memorandum from Christopher P. Weis, USEPA Regional Toxicologist, to Paul Peronard, USEPA On-Scene Coordinator for the Libby

**ATTACHMENT 1**

**DATA**

Locations with ZAI

Location	Property Group	Location and Use Desc
NA		NA
1004 Utah Ave		Residential
102 Mineral Ave		Commercial
1615 Main St		Residential
16329 Bull Lake Rd		Residential
203 E. Spruce St		Residential
321 Bowen Hill Rd (Out Building)		Residential
327 Whitetail Rd		Residential
453 Hogan Dr		Residential
511 Louisiana Ave		Residential
6700 Highway 37		Residential
785 Farm To Market Rd		Residential
819 Freeman Ridge Rd		Residential
1022.5 California Ave Apt A		Residential
1107 Idaho Ave		Residential
517 Montana Ave		Residential
Export Facility		Commercial
2293 Kootenai River Rd		Residential
1004 Louisiana Ave		Residential
1004 Louisiana Ave		Residential
1020 California Ave		Residential
271 Mahoney Rd		Residential
271 Mahoney Rd		Residential
284 Terrace View Rd		Residential
711 California Ave		Commercial
Spur Loop Rd		Residential
1022.5 California Ave Apt A&B		Residential
1022.5 California Ave Apt B		Residential
1111 Idaho Ave		Residential
1218 Montana Ave		Residential
1305 Dakota Ave		Residential
198 Ski Rd		Residential
218 Garden Rd		Residential
226 Spencer Rd		Residential
310 Yellowtail Rd		Residential
346 Granite Ave		Residential
3647 Highway 2 South		Residential
418 Mineral Ave		Commercial
44 Pine St		Residential
505 Louisiana Ave		Residential
609 9th St		Residential/Commercial
803 Mineral Ave		Commercial
819 Cabinet Heights Rd		Residential
Libby Pub Schools Admin bldg		Municipal
Mountain Magic Motel		Commercial

102 9th St	Residential
102 W. 3rd St	Residential
208 Mineral Ave	Residential
233 W. Larch	Residential
305 Montana Ave	Residential
347 Voves St	Residential
392 Garrison Rd	Residential
802 W. Balsam St	Unknown
92 Frazey Rd	Residential
WF Morrison Elementary - Troy	Municipal

2293 Kootenai River Rd	Residential	1-00348	TEM-ISO10312	Dust	1132.240437	S/cm2
303 Farm To Market Rd	Residential	1-00464	TEM-ISO10312	Dust	0	S/cm2
303 Farm To Market Rd	Residential	1-00465	TEM-ISO10312	Dust	0	S/cm2
80 Mahoney Rd	Residential	1-00466	TEM-ISO10312	Dust	0	S/cm2
80 Mahoney Rd	Residential	1-00467	TEM-ISO10312	Dust	0	S/cm2
1306 Minnesota Ave	Residential	1-00468	TEM-ISO10312	Dust	0	S/cm2
1306 Minnesota Ave	Residential	1-00469	TEM-ISO10312	Dust	566.1202186	S/cm2
154 Ski Rd	Residential	1-00470	TEM-ISO10312	Dust	0	S/cm2
154 Ski Rd	Residential	1-00471	TEM-ISO10312	Dust	0	S/cm2
803 Mineral Ave	Commercial	1-00478	TEM-ISO10312	Dust	0	S/cm2
803 Mineral Ave	Commercial	1-00479	TEM-ISO10312	Dust	566.1202186	S/cm2
32 Burr Ave	Residential	1-00521	TEM-ISO10312	Dust	0	S/cm2
32 Burr Ave	Residential	1-00522	TEM-ISO10312	Dust	0	S/cm2
603 Montana Ave	Residential	1-00650	TEM-ISO10312	Dust	0	S/cm2
603 Montana Ave	Residential	1-00651	TEM-ISO10312	Dust	1132.240437	S/cm2
226 Spencer Rd	Residential	1-00652	TEM-ISO10312	Dust	566.1202186	S/cm2
226 Spencer Rd	Residential	1-00653	TEM-ISO10312	Dust	0	S/cm2
1004 Mineral Ave	Residential	1-00656	TEM-ISO10312	Dust	0	S/cm2
1004 Mineral Ave	Residential	1-00657	TEM-ISO10312	Dust	0	S/cm2
1421 Main Ave	Residential	1-00658	TEM-ISO10312	Dust	566.1202186	S/cm2
1421 Main Ave	Residential	1-00659	TEM-ISO10312	Dust	0	S/cm2
1615 Main St	Residential	1-00660	TEM-ISO10312	Dust	1698.360656	S/cm2
1615 Main St	Residential	1-00661	TEM-ISO10312	Dust	1132.240437	S/cm2
56 Enders Dr	Residential	1-00673	TEM-ISO10312	Dust	566.1202186	S/cm2
56 Enders Dr	Residential	1-00674	TEM-ISO10312	Dust	0	S/cm2
1031 Louisiana Ave	Residential	1-00675	TEM-ISO10312	Dust	0	S/cm2
1031 Louisiana Ave	Residential	1-00676	TEM-ISO10312	Dust	0	S/cm2
76 Pine St	Residential	1-00679	TEM-ISO10312	Dust	0	S/cm2
76 Pine St	Residential	1-00680	TEM-ISO10312	Dust	0	S/cm2
284 Terrace View Rd	Residential	1-01101	TEM-ISO10312	Dust	0	S/cm2
284 Terrace View Rd	Residential	1-01102	TEM-ISO10312	Dust	566.1202186	S/cm2
416 4th St	Residential	1-01103	TEM-ISO10312	Dust	0	S/cm2
416 4th St	Residential	1-01104	TEM-ISO10312	Dust	0	S/cm2
512 W. 6th St	Residential	1-01107	TEM-ISO10312	Dust	0	S/cm2
512 W. 6th St	Residential	1-01108	TEM-ISO10312	Dust	0	S/cm2
16329 Bull Lake Rd	Residential	1-01117	TEM-ISO10312	Dust	566.1202186	S/cm2
16329 Bull Lake Rd	Residential	1-01118	TEM-ISO10312	Dust	0	S/cm2
392 Garrison Rd	Residential	1-01121	TEM-ISO10312	Dust	0	S/cm2
392 Garrison Rd	Residential	1-01122	TEM-ISO10312	Dust	566.1202186	S/cm2
819 Freeman Ridge Rd	Residential	1-01123	TEM-ISO10312	Dust	0	S/cm2
819 Freeman Ridge Rd	Residential	1-01124	TEM-ISO10312	Dust	0	S/cm2
208 Mineral Ave	Residential	1-01125	TEM-ISO10312	Dust	0	S/cm2
208 Mineral Ave	Residential	1-01126	TEM-ISO10312	Dust	566.1202186	S/cm2
1004 Utah Ave	Residential	1-01140	TEM-ISO10312	Dust	0	S/cm2
407 Dakota Ave	Residential	1-01271	TEM-ISO10312	Dust	0	S/cm2
407 Dakota Ave	Residential	1-01272	TEM-ISO10312	Dust	0	S/cm2
1004 Utah Ave	Residential	1-01341	TEM-ISO10312	Dust	0	S/cm2

Export Facility	Commercial	1-03545	TEM-ISO10312	Dust	15836.36364	S/cm2
711 California Ave	Commercial	1-04097	TEM-ISO10312	Dust	2552.380952	S/cm2
711 California Ave	Commercial	1-04098	TEM-ISO10312	Dust	0	S/cm2
711 California Ave	Commercial	1-04099	TEM-ISO10312	Dust	0	S/cm2
711 California Ave	Commercial	1-04100	TEM-ISO10312	Dust	0	S/cm2
711 California Ave	Commercial	1-04101	TEM-ISO10312	Dust	0	S/cm2
346 Granite Ave	Residential	1-04252	TEM-ISO10312	Dust	0	S/cm2
346 Granite Ave	Residential	1-04253	TEM-ISO10312	Dust	2233.333333	S/cm2
346 Granite Ave	Residential	1-04254	TEM-ISO10312	Dust	0	S/cm2
44 Pine St	Residential	1-04616	TEM-ISO10312	Dust	0	S/cm2
44 Pine St	Residential	1-04617	TEM-ISO10312	Dust	0	S/cm2
44 Pine St	Residential	1-04618	TEM-ISO10312	Dust	0	S/cm2
44 Pine St	Residential	1-04619	TEM-ISO10312	Dust	0	S/cm2
44 Pine St	Residential	1-04620	TEM-ISO10312	Dust	0	S/cm2
44 Pine St	Residential	1-04621	TEM-ISO10312	Dust	0	S/cm2
102 Mineral Ave	Commercial	1-04716	TEM-ISO10312	Dust	0	S/cm2
102 Mineral Ave	Commercial	1-04717	TEM-ISO10312	Dust	0	S/cm2
102 Mineral Ave	Commercial	1-04718	TEM-ISO10312	Dust	0	S/cm2
102 Mineral Ave	Commercial	1-04719	TEM-ISO10312	Dust	0	S/cm2
102 Mineral Ave	Commercial	1-04720	TEM-ISO10312	Dust	0	S/cm2
102 Mineral Ave	Commercial	1-04721	TEM-ISO10312	Dust	0	S/cm2
3647 Highway 2 South	Residential	1-04737	TEM-ISO10312	Dust	0	S/cm2
3647 Highway 2 South	Residential	1-04738	TEM-ISO10312	Dust	0	S/cm2
3647 Highway 2 South	Residential	1-04739	TEM-ISO10312	Dust	0	S/cm2
3647 Highway 2 South	Residential	1-04740	TEM-ISO10312	Dust	0	S/cm2
3647 Highway 2 South	Residential	1-04741	TEM-ISO10312	Dust	0	S/cm2
3647 Highway 2 South	Residential	1-04742	TEM-ISO10312	Dust	5661.202186	S/cm2
NA	NA	1-04842	TEM-ISO10312	Dust	0	S/cm2
703 California Ave	Residential	1-04900	TEM-ISO10312	Dust	0	S/cm2
703 California Ave	Residential	1-04901	TEM-ISO10312	Dust	0	S/cm2
703 California Ave	Residential	1-04902	TEM-ISO10312	Dust	0	S/cm2
703 California Ave	Residential	1-04903	TEM-ISO10312	Dust	0	S/cm2
703 California Ave	Residential	1-04904	TEM-ISO10312	Dust	0	S/cm2
703 California Ave	Residential	1-04905	TEM-ISO10312	Dust	0	S/cm2
6280 Farm To Market Rd	Residential	1-05105	TEM-ISO10312	Dust	0	S/cm2
6280 Farm To Market Rd	Residential	1-05106	TEM-ISO10312	Dust	0	S/cm2
6280 Farm To Market Rd	Residential	1-05107	TEM-ISO10312	Dust	0	S/cm2
6280 Farm To Market Rd	Residential	1-05108	TEM-ISO10312	Dust	0	S/cm2
6280 Farm To Market Rd	Residential	1-05109	TEM-ISO10312	Dust	8779.661017	S/cm2
6280 Farm To Market Rd	Residential	1-05110	TEM-ISO10312	Dust	0	S/cm2
NA	NA	1-05268	TEM-ISO10312	Dust	14245	S/cm2
NA	NA	1-05271	TEM-ISO10312	Dust	0	S/cm2
NA	NA	1-05275	TEM-ISO10312	Dust	0	S/cm2
NA	NA	1-05276	TEM-ISO10312	Dust	1295	S/cm2
NA	NA	1-05277	TEM-ISO10312	Dust	1295	S/cm2
NA	NA	1-05278	TEM-ISO10312	Dust	0	S/cm2
NA	NA	1-05279	TEM-ISO10312	Dust	0	S/cm2



609 9th St	Residential/Commercial	1R-00235	TEM-ISO10312	Dust	0 S/cm2
609 9th St	Residential/Commercial	1R-00236	TEM-ISO10312	Dust	0 S/cm2
609 9th St	Residential/Commercial	1R-00237	TEM-ISO10312	Dust	0 S/cm2
Export Facility	Commercial	1R-04432	TEM-ISO10312	Dust	0 S/cm2
Export Facility	Commercial	1R-04433	TEM-ISO10312	Dust	169836.0656 S/cm2
Export Facility	Commercial	1R-09971	TEM-ISO10312	Dust	0 S/cm2
Export Facility	Commercial	1R-10787	TEM-ISO10312	Dust	261909.0909 S/cm2
Export Facility	Commercial	1R-10788	TEM-ISO10312	Dust	1218.181818 S/cm2
Export Facility	Commercial	1R-10789	TEM-ISO10312	Dust	24363.63636 S/cm2
Export Facility	Commercial	1R-10790	TEM-ISO10312	Dust	0 S/cm2
Export Facility	Commercial	1R-10791	TEM-ISO10312	Dust	609.0909091 S/cm2
Export Facility	Commercial	1R-10792	TEM-ISO10312	Dust	36545.45455 S/cm2
1022.5 California Ave Apt A	Residential	2-00085	TEM-ISO10312	Dust	0 S/cm2
2293 Kootenai River Rd	Residential	2-00253	TEM-ISO10312	Dust	15515.53209 S/cm2
505 Louisiana Ave	Residential	2-00310	TEM-ISO10312	Dust	0 S/cm2
1107 Idaho Ave	Residential	2-00348	TEM-ISO10312	Dust	452.8961749 S/cm2
284 Terrace View Rd	Residential	2-00386	TEM-ISO10312	Dust	0 S/cm2
284 Terrace View Rd	Residential	2-00389	TEM-ISO10312	Dust	0 S/cm2
226 Spencer Rd	Residential	2-00473	TEM-ISO10312	Dust	0 S/cm2
226 Spencer Rd	Residential	2-00474	TEM-ISO10312	Dust	0 S/cm2
226 Spencer Rd	Residential	2-00475	TEM-ISO10312	Dust	0 S/cm2
803 Mineral Ave	Commercial	2-00506	TEM-ISO10312	Dust	6793.442623 S/cm2
1218 Montana Ave	Residential	2-00863	TEM-ISO10312	Dust	566.1202186 S/cm2
1218 Montana Ave	Residential	2-00866	TEM-ISO10312	Dust	2830.601093 S/cm2
1107 Idaho Ave	Residential	2-01305	TEM-ISO10312	Dust	0 S/cm2
1107 Idaho Ave	Residential	2-01306	TEM-ISO10312	Dust	0 S/cm2
1014 Louisiana Ave	Residential	VC-00003	TEM-ISO10312	Dust	0 S/cm2
1014 Louisiana Ave	Residential	VC-00004	TEM-ISO10312	Dust	0 S/cm2
106 Voves St	Residential	VC-00005	TEM-ISO10312	Dust	0 S/cm2
106 Voves St	Residential	VC-00006	TEM-ISO10312	Dust	0 S/cm2
512 W. 6th St	Residential	VC-00007	TEM-ISO10312	Dust	0 S/cm2
512 W. 6th St	Residential	VC-00008	TEM-ISO10312	Dust	0 S/cm2
35 McKay St	Unknown	VC-00011	TEM-ISO10312	Dust	9057.923497 S/cm2
35 McKay St	Unknown	VC-00012	TEM-ISO10312	Dust	0 S/cm2
115 W. 2nd St	Unknown	VC-00013	TEM-ISO10312	Dust	3396.721311 S/cm2
115 W. 2nd St	Unknown	VC-00014	TEM-ISO10312	Dust	4528.961749 S/cm2
284 Terrace View Rd	Residential	VC-00021	TEM-ISO10312	Dust	0 S/cm2
284 Terrace View Rd	Residential	VC-00022	TEM-ISO10312	Dust	0 S/cm2
208 E. Spruce St	Unknown	VC-00023	TEM-ISO10312	Dust	566.1202186 S/cm2
208 E. Spruce St	Unknown	VC-00024	TEM-ISO10312	Dust	566.1202186 S/cm2
1020 California Ave	Residential	VC-00025	TEM-ISO10312	Dust	0 S/cm2
1020 California Ave	Residential	VC-00026	TEM-ISO10312	Dust	0 S/cm2
203 E. Spruce St	Residential	VC-00027	TEM-ISO10312	Dust	0 S/cm2
203 E. Spruce St	Residential	VC-00028	TEM-ISO10312	Dust	566.1202186 S/cm2
310 E. 5th St	Unknown	VC-00029	TEM-ISO10312	Dust	1698.360656 S/cm2
310 E. 5th St	Unknown	VC-00030	TEM-ISO10312	Dust	1132.240437 S/cm2
1218 Montana Ave	Residential	VC-00031	TEM-ISO10312	Dust	0 S/cm2